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From the Editor's desk

Dear Doctors,

I am very proud to present the NEIGRIHMS Journal, which is in its 5th year of publication. The NEIGRIHMS Journal had its humble beginnings in the year 2009 and I have tried to give a makeover to this journal so as to incorporate a wide variety of articles.

One of the prime concerns of this Journal is to encourage and provide a platform to our young Faculty, postgraduate students and resident doctors to publish their scientific work and clinical experiences. As we all know, the spectrum and pattern of diseases in this region differs from other areas and with the help of this journal we will be able to get insight into such disease manifestations. It is also our endeavor to see that our young doctors who are the future scientific researchers of the country, are initiated into the research methodologies and scientific writings.

Ever since we took over as the editorial board, many people have aided this journal from the beginning till the end, either directly or indirectly and our profound gratitude to all of them. We are indebted to our Director, Prof A.G Ahangar who has always given constant support and encouragement in bringing out this journal despite all odds. I thank all the contributors for their enthusiasms and overwhelming response. Our acceptance rate was nearly 90% this time and we will try to increase the number of issues in the near future so as to accommodate more articles. We are also extremely grateful to the peer reviewers for timely reviewing of the articles. Their valuable inputs will definitely add to the quality of our publications and we look forward to more interactions in the future.

Although we started this journal to encourage our young scientific community at NEIGRIHMS we will be glad to welcome articles from the rest of the country in future editions.

We wish all the readers seasons greeting and a prosperous New Year.

Yours sincerely

Prof. Vandana Raphael
Editor

NEIGRIHMS Journal of Medical & Health Sciences

Official Publication of the Research Society of North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong, India.

Contents

Original Article

A Study on Serum Magnesium Level in Type 2 Diabetes Mellitus Patients Attending NEIGRIHMS, Shillong

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Abstract

Background: Diabetes mellitus is a common metabolic disorder that has hyperglycemia in common, representing a syndrome rather than a single disease. Type 2 diabetes mellitus is on track to become one of the major global public health challenges of the 21st century.

Materials & Methods: The present study was conducted in department of biochemistry, on patients with diabetes mellitus attending, the Diabetic Clinic and OPD of Department of Medicine, NEIGRIHMS. Plasma glucose and serum magnesium were analyzed by a kit method in an automated Beckman coulter analyzer AU2700 plus. A correlation was made between serum magnesium level and severity of Type II diabetes mellitus (DM).

Results: The mean serum magnesium level was found to be significantly ($p<0.001$) decreased in type 2 DM patients (1.89 ± 0.04 mg/dl) in comparison to healthy individuals (2.05 ± 0.10 mg/dl). Moreover there was a significant reduction of serum magnesium level in diabetic cases whose glycemic control was poor. The serum magnesium level correlated inversely with the fasting blood sugar level ($r = - 0.55$) and the post prandial blood sugar level($r = - 0.67$) which was statistically insignificant ($p>0.05$).

Conclusion: The reduction in serum magnesium level may have a contributing role in the development of various complications of diabetes mellitus.

Key Words: *Serum magnesium, Type 2 Diabetes mellitus, Hypomagnesaemia.*

Introduction

Diabetes mellitus is a disorder resulting from both genetic predisposition and favoring environmental factors, and is characterized by alterations in the metabolism of carbohydrate, fat and protein, water and electrolyte homeostasis which are caused by a relative or absolute deficiency of insulin secretion and different levels of insulin resistance. Type 2 diabetes mellitus is on track to become one of the major global public health challenges of the 21st century. It accounts for approximately 90 to 95% of all diagnosed cases of diabetes. Epidemiological data in India shows the same upward trend from 33 million diabetics in 2000 to 57 million in 2025. India has become the "Diabetic Capital of the World".[1] Long standing metabolic derangement lead to the development of clinical complications of diabetes which characteristically affect the eye, the kidney and the nervous system. Diabetic nephropathy is a progressive disease of the kidney. It invariably leads to end stage renal disease. If detected early the progression of the disease may be checked and thus the quality and quantity of life can be improved.

Magnesium is the fourth most abundant cation in the body and the second most, prevalent intracellular

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cation. Magnesium is a co-factor for more than 300 enzymes in the body. In addition magnesium is an allosteric activator of many enzyme system, examples include adenyl cyclase, Na+-K+ATPase, Ca2+-ATPase, phosphofructokinase and creatine kinase. Magnesium is important in oxidative phosphorylation, glycolysis, cell replication, nucleotide metabolism and protein biosynthesis.

Numerous studies have reported indices of magnesium depletion in diabetes by demonstrating reduced levels of magnesium in plasma, serum and erythrocytes. Persistent glycosuria with osmotic diuresis leads to magnesium wasting and likely contributes to the high frequency of hypomagnesemia in poorly controlled diabetes. The reasons why magnesium deficiency occurs in diabetes are not clear. They may include increase urinary loss, lower dietary intake or impaired absorption of magnesium compared to healthy individuals. Several studies have reported increased urinary magnesium excretion in type 1 and type 2 diabetes. It has been shown that low levels of plasma magnesium concentration may contribute to insulin resistance.[2]

It has been suggested that hypomagnesemia leads to reduction in inositol transport and subsequent inositol depletion might enhance the development of diabetic complications. Accordingly, an association between low serum magnesium level and a significantly faster rate of renal function deterioration in patients with type 2 diabetes was reported.[3]

Hence this study was conducted to find out the level of serum magnesium in diabetic patients and to find out the correlation between serum magnesium level and severity of Type II diabetes mellitus.

Materials and Methods

The present study was conducted in Department of Biochemistry on patients with diabetes mellitus attending the Diabetic Clinic and the out patient Department of Medicine, North-East Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS), Mawdiangdiang, Shillong.

It was a case control study conducted on 50 numbers of type 2 diabetic patients from January 2012 to December 2012. Fifty age and sex matched hospital based apparently healthy subjects served as controls.

Type I Diabetes Mellitus patients, patients with renal failure and patients on drugs modifying metabolism of magnesium were excluded from the study.

Plasma glucose was analyzed by GOD/POD Method and Serum Magnesium was analyzed using the Xylidyl Blue method in the Beckman Coulter AU2700 Plus Automated analyzer

Lyphochek Assay Internal Chemistry control (Bio Rad) and ACBI CMC Vellore EQAS were performed for accurate and good quality result of the test.

Results and Observations

The present study included fifty numbers of type 2 diabetes mellitus as cases. Fifty age and sex matched apparently healthy individuals from hospital constituted the control group. The age group ranged from 35 yrs to above 60 yrs with maximum number of cases & controls seen in the 46-50 age group (Table 1). The male to female ratio was 1:1 in both cases and controls.

Table 1: Age and Sex Distribution of Cases & Controls

Age Group (in years)	Male	Female	No. of Patients	Percentage (%)
35-40	2	2	4	8.00
41-45	5	5	10	20.00
46-50	9	4	13	26.00
51-55	4	5	9	18.00
56-60	3	4	7	14.00
>60	2	5	7	14.00
Total	25	25	50	100.00

Statistically significant difference were observed in the mean FBS and PPBS between cases and control (p<0.001) (Table 2).

Table 2: Comparison of (Mean ± S.D) FBS, PPBS in Control & Cases

Parameters	Cases (Mean± S.D.)	Controls (Mean ± S.D.)	"p" Value
FBS	181.36 ± 71.29 mg/dl	87.66 ± 6.52 mg/dl	p<0.001
PPBS	295.42 ± 99.57 mg/dl	119.5 ± 7.28 mg/dl	p<0.001

The mean serum magnesium level was found to be significantly (p<0.001) decreased in type 2 DM patients (1.89 ± 0.04 mg/dl) in comparison to healthy individuals (.2.05 ± 0.10 mg/dl). Moreover there was a significant reduction of serum magnesium level in diabetic cases whose glycemic control was poor. The mean magnesium level was lower in all the age groups of cases when compared to controls and the difference was found to be statistically significant (Table 3).

Table 3: Comparison of Mean ± S.D of Serum Magnesium Between Cases and Controls

Age Group (in years)	Serum Magnesium(mg/dl)		
	Cases (Mean±S.D.)	Controls (Mean±S.D.)	"P" Value
35–40	1.87 ± 0.12	2.22 ± 0.14	p<0.01
41–45	1.91 ± 0.12	1.99 ± 0.16	p>0.05
46–50	1.90 ± 0.09	2.04 ± 0.17	p<0.05
51–55	1.88 ± 0.05	2.13 ± 0.10	p<0.001
56-60	1.87 ± 0.04	2.05 ± 0.13	p<0.01
>60	1.85 ± 0.07	1.92 ± 0.06	p<0.05
Total	1.88 ± 0.02	2.05 ± 0.09	–

The serum magnesium level correlated inversely with the fasting blood sugar level (r = - 0.55) and the post prandial blood sugar level(r = - 0.67) which was statistically insignificant (p>0.05) (Table 4).

Table 4 : Correlation Between Serum Magnesium, FBS & PPBS

Compared Variable	Number of Observed Cases	Mean ± S.D.	"r" Value	"p" Value
Serum Magnesium	50	1.89 ± 0.09	r = - 0.55	p>0.05
FBS	50	181.36 ± 72.01		
PPBS	50	295.42 ± 100.58	r = - 0.67	p>0.05

Discussion

Type 2 diabetes mellitus is on track to become one of the major global public health challenges of the 21st century. Increasing evidence is accumulating that serum status of magnesium play an important role in the development of diabetic complications and their estimation can help in finding out predisposing factors, about prognosis and devising strategy for prevention.

The present study shows that serum magnesium level in normal healthy individuals ranges between 1.80 to 2.40 mg/dl with a mean of 2.05 mg/dl which correlates with the finding of McNair.[3] Mean serum magnesium among controls in the present study was found to be 2.05 ± 0.10 mg/dl. In all the cases with type 2 DM, the mean serum magnesium is 1.89 ± 0.04 mg/dl which is lower than mean serum magnesium in control subjects. These changes have also been found to be statistically significant (p<0.001).

Stutzman and Amatuzio reported low levels of serum magnesium in more severe diabetics.[4] Clough et al also reported hypomagnesemia in diabetes mellitus.[5] Jackson and Mier reported diabetes mellitus to be a condition most frequently associated with hypomagnesemia.[6] They reported that low levels of serum magnesium were commonly associated with poor control of diabetes especially when fasting blood sugar is greater than 180 mg/dl.

McNair *el* reported a definite hypomagnesaemia (less than normal mean - 2 SD) and hypermagnesiuria (greater than normal mean + 2 SD) in 38.6% and 55% of the patients.[3] He also observed that serum magnesium correlated inversely with both fasting blood glucose ($r = -0.32$, $p<0.001$) and the urinary glucose excretion rate ($r = -0.22$, $p<0.005$). There is a significant correlation of serum magnesium ($r = -0.292$, $p<0.02$) with fasting glucose. Thus, in patients with high fasting blood glucose, magnesium tends to be lower.

All the above studies had strongly reported hypomagnesemia in patients with type 2 diabetes mellitus. The findings of the present study were consistent with the reports of the above workers.

Conclusions

The present study shows that the serum magnesium level is significantly decreased in type 2 DM patients in comparison to healthy individuals. Moreover there was a significant reduction of serum magnesium level in cases whose glycemic control was poor.

These findings indicate that there is a definite reduction of serum magnesium level in type 2 diabetes mellitus patients and that reduction of serum magnesium level may have a contributing role in the development of complications of diabetes. The serum magnesium level correlated inversely with the fasting blood sugar level and the post prandial blood sugar level.

Further studies with larger number of cases and longer duration of study with ion selective method, which gives a more accurate picture of the actual magnesium status of the body, are required for a conclusive proposition.

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Original Article

Trends of Usage of Blood and Blood Products, An Experience of the Department of Blood Bank, NEIGRIHMS, Mawdiangdiang

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Abstract

Background: This study was done to see the patterns in the usage of blood and blood products provided from the Department of Blood Bank, NEIGRIHMS in NEIGRIHMS hospital and other hospitals of the city of Shillong.

Materials and methods: Transfusion data of the last three years (2010-2012) of our Department was retrospectively analyzed. Collection and issue rates of different components of blood and the user departments and hospitals were studied. Cross-match to transfusion ratio (CT ratio) also was calculated. Rate of issue of various ABO & Rh (D) blood groups was analyzed. Prepared and discarded number of units of blood and blood products were analysed to ascertain the percentage of wastage.

Observations: There is a rising trend in the usage of components rather than whole blood which has become an outdated concept .From this study we have found that the issue was 1.66 times the collection which was possible only because of use of components and not whole blood. The component which was used most was Packed Red Cells (45.14%) followed by Fresh Frozen Plasma (28.14) & Platelet concentrate (14.78%). Out of the blood units issued "O" positive (35.94%) was the most common followed by "A_1" Positive (31.64%) & "B" Positive (24.03%). The department which used the maximum number of blood or the blood components was ICU (25.98%) followed by General Medicine (21.90 %) & Pediatrics (10.98%) in NEIGRIHMS. Our CT ratio was 1.64 which is well below the accepted ratio of 2-2.5:1. Out of all the blood products prepared, discard was highest for Platelet Concentrates.

Conclusion: Regular auditing of the pattern of usage of blood and blood components is essential to recognize the shortcomings and take corrective measures to improve blood transfusion services.

Key Words : *Blood products, transfusion data, CT ratio.*

Introduction

Blood transfusion is an integral and indispensible part of healthcare system. Transfusion is a life saving intervention, if used correctly. Blood is a drug which can not be manufactured till date and can be prepared only from human beings. Modern transfusion practices have come a long way since the time of discovery of the ABO group system by the father of modern Blood Banking, Karl Landsteiner, which paved the way for a scientific approach to Blood Banking. Blood can be separated into its various components such as Packed Red Cells (PRBC), Fresh Frozen plasma (FFP), Platelet Concentrate (PLT) and Cryoprecipitate (Cryo).Introduction of these blood components has had a major impact on modern medical therapy which has allowed the use of only specific components as required and thus reducing the side effects and also maximizing the usage from a single donated unit. Thus, blood being a scarce resource with its associated risks and hazards, judicious and appropriate use of blood and blood products is absolutely necessary. It is thus essential for a Blood Bank to be able to audit the usage

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of blood and blood components to prevent misuse and scarcity and thus fulfill the demands of these life saving products whenever necessary and to evaluate and review existing trends of blood ordering, which will help frame guidelines on the usage of blood and blood products. This is the very reason why this particular study has been taken up in the Department of Blood Bank, NEIGRIHMS, and Shillong.

Materials and methods:

Transfusion data of the last three years from January 2010 to December 2012 of the Department of Blood Bank, NEIGRIHMS was retrospectively analyzed. Data on the entire blood units collected, components prepared, cross matching performed, the products transfused namely Packed Red Cells (PRBC), Fresh Frozen plasma (FFP), Platelet Concentrate (PLT) and Cryoprecipitate (Cryo) and the user departments and hospitals were studied. Rates of preparation of various components, utilization and Cross-match to transfusion ratio (CT ratio) were calculated. The issues ranged from routine requirements to urgent and immediate needs.

Observations:

During the study period of three years, 6406 blood units were collected and 10,506 units of various components were issued. It is observed that the issues were on an average 1.65 times more than the collections. From this data it is very clear that separating blood into its various components and rational use of blood and its products help in maintaining a healthy inventory of a Blood Bank, thus ensuring round the clock availability of blood and blood products. A year wise break up is as given in table 1.

Table 1: Collection & Issue

Year	Collection	Issue	Issues: Collection ratio
2010	1996	2878	1.44:1
2011	2361	3831	1.62:1
2012	2047	3927	1.91:1
Total	6406	10,636	1.66:1

Of the total 10,636 units issued, 9.87% was Whole blood, 45.18% PRBC, 14.78% PLT, 28.14%FFP and 1.98% CRYO. The concept of whole blood is outdated and there are no benefits instead hazards associated with the transfusion of Whole blood. Our Blood Bank has been practicing 100% component preparation since February 2012. A year wise break up is as given in table 2.

Table 2: Year wise issue of blood and blood components

Year	2010	2011	2012	Total	%
WB	758	270	23	1051	9.87
PRBC	1069	2019	1719	4807	45.18
PLT	421	578	574	1573	14.78
FFP	627	959	1408	2994	28.14
CRYO	3	5	203	211	1.98
Total Issues	2878	3831	3927	10,636	

Out of the total 10636 units issued, the most issued groups were as follows “O” Positive (35.94%),“A1” Positive (31.64%) & “B” Positive (24.03%). Amongst the Rh (D) negative blood groups, “O” Negative (40%) was the group most issued followed by “B” Negative (34.66%) & “A_1” Negative (16 %). A year wise break up is as given in table 3:

Table 3: Various ABO & Rh(D) groups

Blood Group	2010	2011	2012	Total
“A1” Positive	829	1290	1247	3366
“A1” Negative	0	5	7	12
“A2” Positive	13	18	21	52
“A2” Negative	0	1	0	1
“B” Positive	679	930	947	2556
“B” Negative	5	8	13	26
“O” Positive	1106	1298	1419	3823
“O” Negative	8	5	17	30
“A1B” Positive	217	260	240	717
“A1B” Negative	1	3	2	6
“A2B” Positive	20	13	14	47
“A2B” Negative	0	0	0	0
Total	2878	3831	3927	10636

The patients who received transfusions were admitted in various departments of NEIGRIHMS Hospital and other hospitals in the city of Shillong. Out of the total 10,636 units issued, 9344 (87.85%)were issued to the various departments of NEIGRIHMS and only 1292 (12.14%) were issued to the outside hospitals .The major user departments in the study are ICU (25.08%), General Medicine (21.90%) & Pediatrics(10.98%) from NEIGRIHMS and Nazareth (5.80%) & Bethany Hospitals (4.54%) from amongst the outside hospitals.

Table : 4 Rate of consumption of blood and blood components by various departments, NEIGRIHMS hospital and outside hospitals

	2010	2011	2012	Total	% of usage
Cardiology & ICCU	114	188	133	435	4.08
ICU	802	818	1049	2669	25.09
CTVS & CTVS ICU	235	228	286	749	7.04
General Medicine	554	925	851	2330	21.9
O & G	139	186	162	487	4.57
Orthopedics	82	90	52	224	2.10
Pediatrics & PICU	329	468	372	1169	10.99
General Surgery	99	115	65	279	2.62
Urology	83	106	66	255	2.39
ENT	124	87	55	266	2.50
Oncology	189	133	63	385	3.61
Neurology	17	11	25	53	0.49
Dialysis	0	0	35	35	0.32
Casualty	0	8	0	8	0.07
Outside hospitals	111	468	713	1292	12.14
	2878	3831	3927	10,636	

Cross match to Transfusion Ratio (CT ratio) is the ratio of the compatibility tests performed to number of blood units issued thus providing us information regarding the unnecessary compatibility tests performed for every unit issued. In our study, the CT ratio is found to be 1.64: 1, which is well below the accepted ratio of 2-2.5:1.

Table 5: CT Ratio

	Cross match	Transfusion	CT Ratio
2010	3048	2289	1.33:1
2011	3532	1827	1.93:1
2012	3041	1742	1.74:1
Over all	9621	5858	1.64 : 1

As blood & blood products are extremely precious commodities which are most of the time in shortage especially in the state of Meghalaya, wastage should always be kept to a minimum as much as possible using different strategies. The data of wasted blood & blood products of the mentioned three years of Blood Bank, NEIGRIHMS is as given in Table 6.

Discussion:

Blood is considered a drug and a Blood Bank functions as per the guidelines laid down by the Drugs & Cosmetics Act 1946. When used judiciously it is a life saving intervention but if used inappropriately, can be a hazard. Modern transfusion services aim to provide appropriate components and not whole blood for patients with specific hematologic deficiencies.[1] Working towards this aim, the Department of Blood Bank, NEIGRIHMS has been working towards achieving 100% component preparation since 2011 ,the target of which has been achieved since February 2012 .Thus a rising trend is seen in the usage of blood components as evident from the present study.

The present audit on blood and blood component usage showed a ratio of 4.57:1.49:2.84:0.20 for the components PRBC: FFP: Platelet: Cryo to Whole Blood, which does not tally with many studies where whole blood is still used widely inspite of component separation facilities.[2,3] PRBC is the most issued blood component (45.18%) with anemia being the most common indication. Alternative therapies like proper diet, hematinics and use of erythropoietin whenever possible can reduce the necessity of use of blood and

Table 6: Preparation and discard of blood and blood products:

Year	Whole Blood		Packed Red cell		Fresh Frozen Plasma		Platelet Concentrate	
	Preparation	Discard	Preparation	Discard	Preparation	Discard	Preparation	Discard
2010	862	47	1134	45	1134	3	734	269
2011	328	17	2033	45	2033	83	1260	582
2012	31	2	2016	180	2016	197	1368	798
Over all	**1221**	**66 (5.4%)**	**5183**	**270 (5.2%)**	**5183**	**283 (5.4%)**	**3362**	**1649 (49.0%)**

its components. FFP is the next most commonly used product (28.14%) and the most common indication being Coagulation disorders due to Alcoholic Liver Disease, seen in our setting. High proportion of inappropriate usage of FFP has been reported in many studies. FFP misuse results in wastage and subjects recipients to unpredictable adverse reactions. Platelet Concentrate is the third most used blood component (14.78%). Whole blood usage is at the rate of 9.87%.The only indication being acute blood loss, exchange transfusion and autologous blood transfusion. Use of Packed Red Cells instead of whole blood has the advantages of reduced incidents of congestive heart failure, less infused acid anticoagulants, fewer allergenic proteins, etc. The least used component (1.98%) is Cryoprecipitate.[4] The use of Cryoprecipitate is mainly for correction of factor VIII deficiency in our scenario.

Discard of blood & blood products is inevitable in a Blood Bank setting due to various reasons like expiry, Transfusion Transmissible Infection reactivity, leakage, unutilized units returned from various wards, etc. In our setting, the maximum discard occurred with Platelet Concentrates (49.0%) due to its short life span of three days only. The rest of the products (WB, PRBC, FFP) were within a comfortable range of 5.2 to 5.4 %.[5]

Conclusion:

It is of utmost importance of a Blood Bank to give the best possible help to the clinicians for treating patients who require transfusions by making available a safe and regular supply of blood and blood components at any point in time. To provide such a service, it is important to know the trends of blood usage and ordering pattern in a hospital. Thus, regular auditing of the pattern of usage of blood and blood components is required to frame policies and guidelines to improve blood transfusion services. Active efforts to spread the awareness on rational use of blood and blood components amongst the clinicians through seminars and CMEs should be made to reduce inappropriate transfusion practices.

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Original Article

Patient Load and Service Utilization Pattern of Children with Renal Diseases in a General Pediatrics Department: An Account of NEIGRIHMS Pediatrics Department

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Abstract

Background: In Most centers in India children with renal disease are cared for in general pediatric departments. This is true for North eastern India where there is no established pediatric nephrology service. Children with renal disease pose how big a load to such pediatric department in this part of country is not clear.

Methods: the data regarding children with renal disease are collected from prospectively maintained indoor and outdoor registers.

Setting: tertiary care center in north east India Results: renal disease accounts for 5.1% total admissions and 6.3 % of total bed occupancy. Post streptococcal glomerulonephritis (APSGN) and Nephrotic syndrome (NS) are the most common causes of inpatient admission while Urinary tract infection and nephrotic syndrome are commonest cause3 of outpatient visit in out center.

Conclusion: Children with renal diseases constitute a significant share of utilize of inpatient and outpatient services in our general pediatric department.

Keywords: *Renal disease, Pediatric, nephrology.*

Introduction

The subspecialty of pediatric nephrology has developed within the last 40–50 years and since then more and more pediatricians around the world have become interested in this field of patient care and clinical research.[1] In the western world pediatric nephrology is an established sub-specialty distinct from adult nephrology. Currently excellent centers exist in Europe and North America in terms of patient care and research.[2] Asia is lagging behind in overall health care compared to developing countries. However, Asia as well as India is making a steady progress in health care services that also includes pediatric nephrology services.[3] Indian society of pediatric nephrology has more than 300 active members; this includes trained pediatric nephrologists and pediatricians with interest in pediatric nephrology. Some of the pediatric nephrology centers are running training programs also. Aim of such training programme is to develop pediatric nephrology services at the home institution under the mentorship of the training institute.[4] However, currently approximately only a few organized pediatric nephrology centers exist in the country.[5] Short of such organized services, children with kidney diseases continue to be treated in general pediatric departments. North East India is struggling to keep pace with rest of India. To our best of knowledge, there are currently three trained pediatric nephrologists practicing in the region. However, full-fledged pediatric nephrology services unfortunately for some reason has failed to develop and thus currently there is no organized pediatric nephrology service in the region. Children continue to visit general pediatric department for such services. However, it is not known what is the share of the patient load and what are the

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service utilization pattern of childhood renal diseases in such general pediatric department. Our institute also currently offers pediatric nephrology services under the general pediatric department. Our study will give an insight into this aspect in this part of the country; an idea of pediatric nephrology constitutes how big a burden on pediatric health care system in this institute in particular and this part of country in general. Such data could be important in planning and resource allocation for health care services in the institute and elsewhere.

Overview of the pediatric nephrology services in the institute:

The Department currently runs Pediatric nephrology services as a part of general pediatric services. It runs OPD on six days a week with round the clock emergency services. Since First September 2012 the Department is running a pediatric nephrology clinic. The institute currently does not have an adult nephrology unit and the dialysis unit is under Department of Medicine.

Objective:

We attempt to outline the patient load and pattern of services utilization in comparison to overall load of the department under the following heading- a) Out-patient services b) Inpatient services c) specialized nephrology services.

Material and Methods:

Data was collected from the prospectively maintained inpatient and outpatient pediatric nephrology registers (Data from Jan 2011-july 2011 is retrospectively collected). The general pediatric OPD register bearing the diagnosis of all patients is also reviewed and children with renal disease identified. Children with acute kidney injury due to a non nephrological primary disease were not included in the study because for operational ease. It was suspected that AKI burden could be underestimated because of inconsistent use of diagnostic criteria by different clinicians. Currently a separate prospective registry for AKI using the AKIN criteria is undergoing since March 2013. Data on dialysis is also collected from the common dialysis unit for number and frequency of dialysis. The numeric data is expressed in numbers and proportions as applicable.

Results:

a) Patient load and service utilization: Outdoor

In the pediatric OPD, out of total 14357 visits, 422 (2.9%) visits were due to a renal disease. Most visits were for urinary tract infection, Nephrotic syndrome and acute glomerulonephritis (Table 1). Nephrology clinic was functional from September 2012 and very small number of these children visited the clinic.

Table1: Frequency of cases in outpatients (number of visits)

	Number of visits*	Percentage out of total renal visits
UTI	228	54%
Nephrotic syndrome	121	28.6%
APSGN	21	4.9%
Stones	13	3.0%
HSP nephritis	10	2.3%
Nephrourological	9	2.1%
SLE nephritis	7	1.6%
CKD	4	0.9%
Miscellaneous	9	2.1%
Total	422	100%

* The figures denote number of visits and not number of patients

b) Patient load and Service utilization pattern: Indoor:

The inpatient load and spectrum is depicted in the Table 2 & 3. Out of 3810 admissions in the department (pediatric ICU + General ward) during the two year period, 198 admissions were due to renal cause. Nephrology admissions accounted for 5.1% of children admitted to the department. These admissions utilized 7.2 % & 4.7 % of total bed occupancy in pediatric general ward and pediatric intensive care unit respectively. Post-streptococcal glomerulonephritis (APSGN) and nephrotic syndrome (NS) are the commonest cause of admissions due to a renal condition and accounted for most 'patient days' of inpatient care.

Table2: Spectrum of inpatients and number of admissions requiring in patient care (General ward and ICU combined)

	2011		2012	
	Number of children	Number of admissions	Number of children	Number of admissions
APSGN	35	35	17	17
RPGN	4	7	2	3
SSNS	9	17	13	22
SRNS	4	14	9	18
UTI	9	9	12	12
SLE Nephritis	4	8	3	4
CKD(>stage III)	5	6	6	9
HSP Nephritis	3	5	6	6
Urolithiasis	2	2	2	2
Nephrourological cases	0	0	2	2
Total	75	103	72	95

Table 3: Share of bed occupancy in patient-days in Pediatric general ward (PGW) and Pediatric Intensive care unit (PICU).

	Patient days	Percentage of total bed occupancy	Patient days	Percentage of total bed occupancy	Patient days	Percentage of total bed occupancy
2011	408	6.8%	181	5.8%	589	6.5%
2012	462	7.5%	125	3.7%	587	6.2%
Total	870	7.2%	306	4.7%	1076	6.3%

c) Load and utilization pattern: Specialized services

The numbers of specialized intervention performed are outlined in Table 4. Renal biopsies are performed by an interventional radiologist under ultrasound guidance. Peritoneal dialysis was the most commonly performed renal replacement therapy. The indications included Acute Kidney Injury, including hemodynamically unstable cases and ESRDs with acute presentation as rescue. ESRDs accounted for about 1/3rd of acute peritoneal dialysis session. They were shifted to maintenance hemodialysis after stabilization and confirmation of diagnosis. Hemodialysis was used mostly for maintenance dialysis. The frequency at which children advised maintained turned up for dialysis was twice a week to once a fortnight. This was largely due to financial reasons despite counseling about need for more frequent sessions(Table 5). For the same reason a CAPD program has yet not been in place.

Table 4: Number of specialized procedures performed.

	2011	2012
Renal Biopsy	13	15
Hemodialysis		
a) Acute:	7 sessions	3 sessions
b) Maintainance:	27 sessions	63 sessions
Peritoneal dialysis	10	12
Temporary IJV cather placed	5	7
Plasmapheresis	6 sessions	Nil

Table 5: Fate of ESRD patients

Patient	duration of survival after initiation on HD	Number of HD session received	Reason for inadequacy/ remarks
Patient 1	-	0	Decided not to initiate RRT
Patient 2	24 weeks	44 sessions	Financial reason
Patient 3	16 weeks	22 sessions	Financial reason
Patient 4	Lost to follow up after 2 weeks of hospitalization	9 sessions	Opted out of HD, Financial reason
Patient 5	20 weeks	29 sessions	Went to higher center for transplant

Experience from different part of the world suggest that pediatric renal diseases constitute 1.8-7.8 % of all patients admitted in a general Pediatric Department.[6-9] Such data from India especially from north east India is scarce. A study from Guwahati showed that renal diseases constitute 7.17% of total inpatient admission.[10] Ours results shows that renal disease accounts for 5.1% total admissions and 6.3 % of total bed occupancy thus confirming the fact that renal diseases account for sizeable share of inpatient load in a pediatric

department in this part of country. Glomerular diseases are the commonest cause of admission(table 1).[10] Acute post streptococcal glomerulonephritis, followed by nephrotic syndrome are the top two causes of glomerular diseases in north east India.[10, 11] Chronic kidney diseases are quite often diagnosed late, thereby denying any possible intervention to prevent progression.

In our experience, children with kidney diseases are also important utilizers of intensive care services (table 3). This mostly includes children with APSGN with hypertensive emergencies, Nephrotic syndrome with sepsis and sick children with AKI requiring renal replacement therapy. Acute peritoneal dialysis is the most commonly performed renal replacement therapy in our center. This can be attributed to clinician preference and unavailability of round the clock hemodialysis facility. This is also reflected in the fact that 1/3rd of children with ESRD required to be rescued with an acute peritoneal dialysis. Choice of renal replacement therapy varies from center to center and is influenced by a lot of factors. In a recent survey among various pediatric nephrology centers, peritoneal dialysis was the predominant modality (accounting for more than 80% of all dialysis) in 14 of the 22 centers, while 4 centers used hemodialysis more commonly. The most important factors influencing the modality choice were patient size, hemodynamic stability, and duration of AKI.[4]

Hemodialysis was mostly used in our center for maintainace renal replacement. Five adolescents were newly diagnosed as ESRDs during the period of 2 years. Four out of 5 could be initiated on maintainace hemodialysis. All of them were counseled for renal transplantation but only one decided for it. The survival of patient after initiation of hemodialysis is very disappointing. The compliance to the hemodialysis regime was very poor and all of them receive on an average just over one dialysis per week. The reasons for poor compliance were financial and distance of our center from their home. Management of ESRDs and provision of adequate dialysis is inadequate in most of the underdeveloped world and is a moral and ethical issue.[12] It is possible that our data underestimate the incidence of kidney disease, chronic kidney disease in particular because of absence of an adult nephrology unit in our institute.

In this part of India, unlike major cities, children with kidney disease still continue to go to adult nephrologists. The American academy of pediatrics asserts that all children with pediatric kidney diseases should have access to care of pediatric nephrologists to maximize their clinical and psychosocial outcomes. This endorsement is based on the differences in practice patterns and time allocation between pediatric and internal medicine nephrologists.[13] Children and adolescents with renal diseases require greater clinical time and supervision than do adults, as a direct result of their greater disease acuity and changing maturational and developmental status.

The need of setting up of sub-specialty services in developing countries are always debated as basic health care is an obvious priority. As we continue to pay our attention to the major killer diseases, there is a need to pay some attention to other chronic diseases at policy and planning level as these are significant causes of morbidity. The development of pediatric nephrology services in settings with limited resources might actually include more of strategic planning and prioritization rather than exorbitant financial expenditure.[14-16] Simple efforts like an organized outpatient follow up clinic, urine analysis, blood pressure measurements and glomerular filtration rate estimation by serum creatinine can make a difference. In our center pediatric nephrology clinic was started on September 2012. The pediatric nephrology clinic services are underutilized as only a handful of total renal patient attending pediatric OPD is attending the clinic. Though there could be organizational issues, the authors speculate that this could be because of it being in same OPD area, and same timing. Moreover same doctors are available on both general pediatric OPD and the pediatric nephrology clinic. Therefore patients tend to come at their convenience rather than a fixed time. Urinary tract infection and nephrotic syndrome are top two causes of OPD attendance.

This is one of the first efforts to document the burden of pediatric renal patient on the health care system in this part of India. We conclude that pediatric renal diseases constitute a sizable share of total patient load in a general pediatric department taking care of such children. As there is no organized nephrology service in north east India, there is an urgent need of such facility in this region.

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Conflict of interest: HB has undergone one year training in pediatric nephrology and trying to organize pediatric nephrology services in the institute.

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Review Article

A Review of Fibromyalgia

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Abstract

Objective: To inform Health care professionals about diagnostic evaluation and various mechanisms of this little known but otherwise complex and very common disorder encountered in the clinical practice called as Fibromyalgia and its potential problems with management strategies.

Data source: We searched Pubmed, Medline using key words Fibromyalgia, MFPS and chronic widespread pain, medicines and Cochrane database of systematic reviews for exercises and psychological therapies in fibromyalgia.

Conclusion/Recommendations: Establishing the diagnosis and instituting extensive treatment and rehabilitation program can greatly improve the prognosis of the patient.

Keywords: *Fibromyalgia, chronic widespread pain, medicines.*

Introduction

Fibromyalgia is a common condition characterised by long term chronic widespread pain for more than 3 months. Fibromyalgia patients often have heightened sensitivity to pain (hyperalgesia) and non-noxious stimuli may result in pain (allodynia). These patients may present with a wide range of additional symptoms including tenderness, sleep disturbances, fatigue, morning stiffness, cognitive complaints and mood disorders and even associated irritable bowel syndrome, chronic fatigue syndrome, migraine, Gulf war syndrome, and lower back or neck pain.[1,2,3]

Epidemiology of FM

FM is one of the most common Chronic Widespread Pain conditions.[1]. FM is highly under diagnosed.[4] Only 1 in 5 patients suffering from FM are actually diagnosed and diagnosis takes an average of 5 years.[5] The Prevalence in United States is about 2%-5% of adult population.[1] In England and Wales the prevalence rates is about 11.2% and the rates were 7% higher in women than in men.[6] It Impacts a wide range of patients. It has been found that most patients are between 25 and 60 years of age and women more likely to be diagnosed than men.[4] A number of studies have assessed the prevalence of Fibromyalgia in general population, with rates ranging from 1% to 11% with overall population prevalence estimated to about 2%.[7]

History

Depictions of chronic wide spread pain have appeared in literature since the dawn of literary embellished recorded time. For example, such references to the protagonist symptoms and appearance appeared in the Babylonian epic of Gilgamesh (ca.2800 B. C).[8]

The word rheumatism was first used to denote a specific musculoskeletal syndrome by Guillaume de Bailou around 1592 and more particularly to be diagnostic of non-articular musculoskeletal disorders by F.B. de Sauvages de la croix in 1763 in the first modern classification of rheumatic disease.[9]

Historical references to the FMS- like symptoms are found as far as back as Hippocrates. Straus cites the treatise of the 18th century physician, who describes such a

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disorder, found predominantly "among women…… who are sedentary and studious". Robert Froriep was the first to describe extremely tender, palpable hardening in muscles of patients with rheumatic disease in the year 1843. [10]

In 1919 F. Lange and G. Eversbusch coined the term "Muskelharten" which means "muscle hardenings", to describe tender points associated with regions of palpable hardness in skeletal muscle. [10, 11] Chronic widespread pain had already been described in the literature in the 19th century but the term fibromyalgia was not used until 1976 when Dr Hench used it to describe these symptoms.[12]

Many names, including "muscular rheumatism", "fibrositis", "psychogenic rheumatism", and "neurasthenia" were applied historically to symptoms resembling those of fibromyalgia. The word 'Fibrositis' was changed to fibromyalgia- which defined a condition of generalised pain marked by multiple tender points by Yunnus et al.[13]

In 1987, the American Medical Association (AMA) acknowledged fibromyalgia as a true illness and a potential cause of disability. Many well-respected organizations, such as the AMA, the National Institutes of Health (NIH), and the World Health Organization (WHO), have accepted fibromyalgia as a legitimate clinical entity. Fibromyalgia is derived from the Latin fibra (fiber)[14] and the Greek words myo (muscle)[15] and algos (pain).[16]

A 1987 article in the Journal of the American Medical Association used the term "fibromyalgia syndrome" while saying it was a "controversial condition".[17] The American College of Rheumatology (ACR) published its first classification criteria for fibromyalgia in 1990.[18]

Clinical symptoms

It is a clinical syndrome characterized by widespread muscular pain (usually chronic), fatigue and muscle tenderness (tender points). Additional symptoms are common and include poor sleep (almost always), headaches, irritable bowel syndrome, cognitive and memory problems ("fibro fog"), which may be characterized by impaired concentration, problems with short and long-term memory, short-term memory consolidation, impaired speed of performance, inability to do multi-tasking, cognitive overload, and diminished attention span.[19] Numbness and tingling in fingers and toes, irritable bladder, temporomandibular joint (TMJ) disorder, restless leg syndrome, dry eyes and dry mouth, morning stiffness, anxiety and depression and palpitations. Symptoms including pain may wax and wane over time.

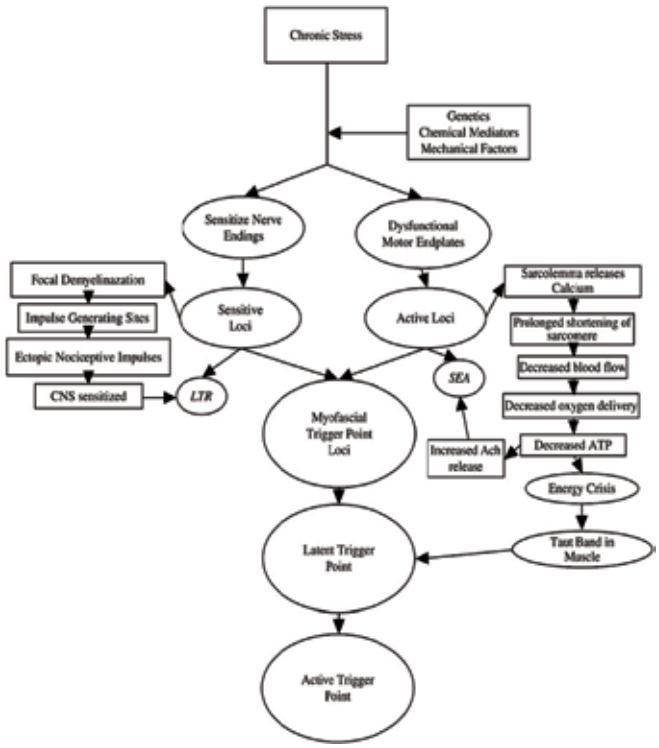
Pathophysiology

Trigger Point Manifestations-

The trigger point is responsible for the clinical symptoms of Myofacial pain syndrome (MPS). Local tenderness is quintessential to the trigger point. Pain at a distance is characteristic of MPS. It represents referred pain that is the result of trigger point-induced central sensitization. Nociceptive activity that arises in foci of painful muscle activates spinal cord dorsal horn neurons and sensitizes the central nervous system, causing central sensitization, hyperalgesia, and referred pain. Muscle weakness without atrophy occurs due to trigger point induced motor inhibition. Restricted range of motion occurs because of the shortening of the contracted taut band, and perhaps because of pain.[20]

The trigger point causes pain. At its most activated state, it causes pain at rest. In less severe cases, it causes pain as the muscle is used. Such trigger points that cause spontaneous pain are called active trigger points. A trigger point that is not spontaneously painful with use or at rest is termed latent; it is recognized by a taut band in the muscle. It does not reproduce the patient's usual pain, but is painful when activated by mechanical stimulation such as palpation or needling. This descriptive terminology illustrates the dynamic nature of the trigger point, changing in its degree of irritability or activity, and raising the question of what the minimum changes are that occur in muscle when it is injured or stressed to form the nascent trigger point. The clinically evident progression from a non-tender taut band to a tender taut band suggests that the first change in muscle is the development of the contracted

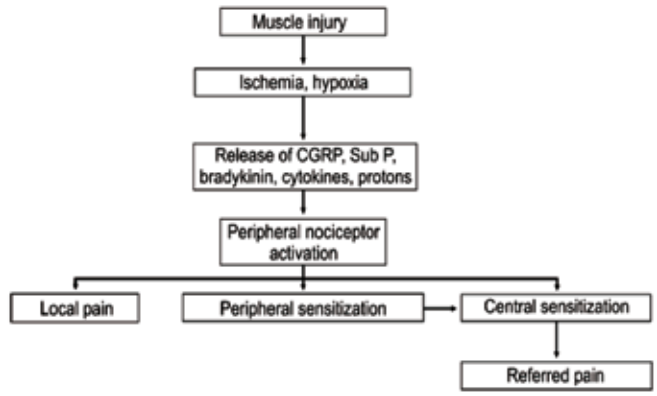
or taut group of muscle fibres that can then become painful when sufficiently stressed.[20]



Pathophysiology of a trigger points. Ach, acetylcholine; CNS, central nervous system; LTR, local twitch response; SEA, spontaneous electrical activity.[21]

Central Sensitization

Central sensitization is believed to be an underlying cause of the amplified pain perception that results from dysfunction in the CNS.[2] This may explain hallmark features of generalized heightened pain sensitivity (Williams DA and Clauw DJ).[22] It Includes hyperalgesia which is amplified response to painful stimuli and allodynia which is pain resulting from normal stimuli. The theory of central sensitization is supported by the increased levels of pain neurotransmitters like Glutamate and Substance P.[23,24] CSF levels of substance P are 3-fold higher in patients with FM. FM is believed to be a chronic, central pain state. Functional Magnetic Resonance Imaging (fMRI) data provide supporting evidence that FM involves altered central pain processing.[2] Central connections of the trigger point tenderness are certainly associated with central sensitization and hypersensitivity, just as is the case with other tissues. The central representation of pain can be imaged with functional magnetic resonance scanning (fMRI) in persons with multiple trigger points (MTrPs) that is consistent with central sensitization. At matched stimulus and pain intensity, significantly enhanced somatosensory and limbic activity and suppressed dorsal hippocampal activity are seen in patients with a hypersensitive MTrPs compared to control subjects. Modulation of pain evoked from a MTrPs by electrical stimulation is centrally mediated through the periaqueductal gray centre in the brainstem, as demonstrated by fMRI is likely to be involved in the modulation of pain affect.[20]



This chart shows the relationship of muscle injury to the sensory manifestations of trigger point pain, namely the activation of peripheral nociceptors and the initiation of central sensitization.20

Despite extensive research, the pathogenesis of pain in FM is not clearly understood. However, central sensitization has emerged as a leading theory of disease mechanism.

Other theories:

Dopamine dysfunction: The "dopamine hypothesis of fibromyalgia" proposes that the central abnormality responsible for symptoms associated with fibromyalgia is a disruption of normal dopamine-related neurotransmission.[25]

Serotonin metabolism: In 1975, researchers hypothesized that serotonin, a neurotransmitter that regulates sleep patterns, mood, concentration and pain, and could be involved in the pathophysiology of fibromyalgia-associated symptoms.[26] In 1992, decreased serotonin metabolites in patient blood samples and cerebrospinal fluid were reported.[27]

Growth hormone: Levels of hormones under the direct or indirect control of growth hormone (GH), including IGF-1, cortisol, leptin and neuropeptide Y

may be abnormal in people with fibromyalgia, but supplementing growth hormone in patients does not have large effects.[28]

Poly-modal sensitivity: Results from studies examining responses to experimental stimulation suggest that fibromyalgia patients may have heightened sensitivity of the nociceptive system, which senses pressure, heat, cold, electrical and chemical stimulation.

Sympathetic hyperactivity: Fibromyalgia patients demonstrate lower heart rate variability, an index of sympathetic/parasympathetic balance, indicating sustained sympathetic hyperactivity, especially at night.

Cerebrospinal fluid abnormalities: Evidence for increased excitatory amino acid release within cerebrospinal fluid, with a correlation demonstrated between levels for metabolites of glutamate and nitric oxide and clinical indices of pain.[29]

Evidence of abnormal brain involvement in fibromyalgia has been provided via functional neuroimaging. The first findings reported were decreased blood flow within the thalamus and elements of the basal ganglia and mid-brain (i.e. pontine nucleus).[30]

Differential activation in response to painful stimulation has also been demonstrated. Brain centers showing hyperactivation in response to noxious stimulation include such pain-related brain centers as the primary and secondary somatosensory cortices, anterior cingulate cortex, and insular cortex. Patients also exhibit neural activation in brain regions associated with pain perception in response to nonpainful stimuli in such areas as the prefrontal, supplemental motor, insular, and cingulate cortices. Evidence of hippocampal disruption indicated by reduced brain metabolite ratios has been demonstrated by studies using single-voxel magnetic resonance spectroscopy (1H-MRS).[31]

Diagnosis

Fibromyalgia is clinically diagnosed and there are no specific tests or investigations. American College of Rheumatology (ACR) fibromyalgia classification criteria in 1990 was used to diagnose fibromyalgia.

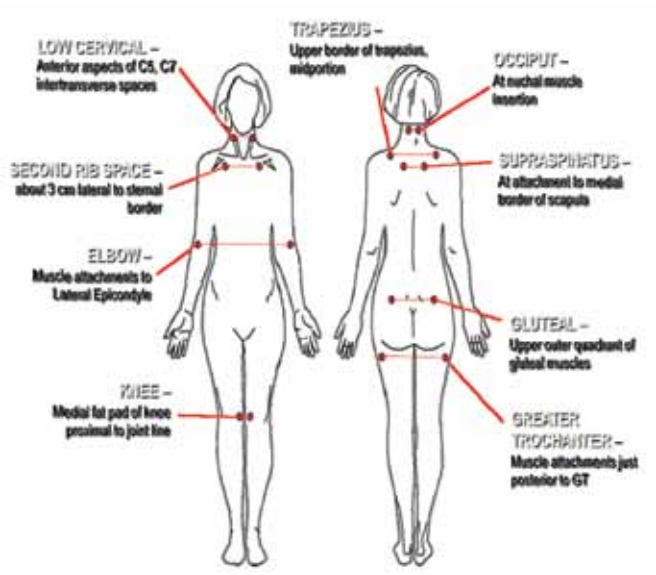
- Pain for ≥3 months

- Pain at ≥11 of 18 tender points when palpated with 4 kg of digital pressure (thumb pressure with pain threshold reached at or before thumb nail blanches) or with algometer

1. History of widespread pain. Pain is considered widespread when all of the following are present:
    a. Pain in the left side of the body
    b. Pain in the right side of the body
    c. Pain above the waist
    d. Pain below the waist
    e. Axial skeletal pain (cervical spine or anterior chest or thoracic spine or low back)
2. Pain on digital palpation in at least 11 of the following 18 tender point sites.
    a. Occiput: bilateral, at the suboccipital muscle insertion
    b. Low cervical: bilateral, at the anterior aspect of the intertransverse spaces at C5–7
    c. Trapezius (anterior): bilateral, at the midpoint of the upper border
    d. Supraspinatus (anterior): bilateral, at the origin, above the scapular spine near the medial border
    e. Second rib (anterior): bilateral, at the second costochondral junction, just lateral to the junction on the upper surface
    f. Lateral epicondyle: bilateral, 2 cm distal to the epicondyle
    g. Gluteal: bilateral, in the upper outer quadrant of the buttock
    h. Greater trochanter: bilateral, posterior to the trochanteric prominence
    i. Knee: bilateral, at the medial fat pad proximal to the joint line

- Clinically -Digital palpation should be performed with a moderate degree of pressure. For a tender

point to be considered positive, the subject must state that the palpation was painful. "Tender" is not to be considered painful.



Another criteria for diagnosis was introduced by the Canadians. Accordingly Canadian Diagnostic Criteria for FM Includes the ACR criteria and evaluates patients based on other symptoms commonly observed in FM (i.e., sleep disturbance and fatigue) Chronic widespread pain and tenderness are core diagnostic features. Clinical case definition of FM includes evaluation of additional clinical signs and symptoms commonly observed in patients with FM (neurocognitive manifestations, sleep disturbance, fatigue). It allows clinician to evaluate impact of entire clinical spectrum of FM and tailor treatment.[32]

New ACR criteria for Fibromyalgia was introduced in 2010 as over a time, a series of objections to the ACR classification criteria developed, some practical and some philosophical. Firstly, it became increasingly clear that the tender point count was rarely performed in primary care where most fibromyalgia diagnoses occurred, and secondly, when performed, was performed incorrectly. Even many physicians did not know how to examine for tender points and some simply refused to do so.

Criteria

A patient satisfies diagnostic criteria for fibromyalgia if the following 3 conditions are met:

1) Widespread pain index (WPI) ≥7 and symptom severity (SS) scale score ≥5 or WPI 3–6 and SS scale score ≥9.
2) Symptoms have been present at a similar level for at least 3 months.
3) The patient does not have a disorder that would otherwise explain the pain.

Ascertainment

1) WPI: note the number areas in which the patient has had pain over the last week. In how many areas has the patient had pain? Score will be between 0 and 19.

Shoulder girdle, left	Hip (buttock, trochanter), left	Jaw, left	Upper back
Shoulder girdle, right	Hip (buttock, trochanter), right	Jaw, right	Lower back
Upper arm, left	Upper leg, left	Chest	Neck
Upper arm, right	Upper leg, right	Abdomen	
Lower arm, left	Lower leg, left		
Lower arm, right	Lower leg, right		

2) SS scale score:

Fatigue
Waking unrefreshed
Cognitive symptoms

For the each of the 3 symptoms above, indicate the level of severity over the past week using the following scale:

0 = no problem
1 = slight or mild problems, generally mild or intermittent
2 = moderate, considerable problems, often present and/or at a moderate level
3 = severe: pervasive, continuous, life-disturbing problems

Considering somatic symptoms in general, indicate whether the patient has:*

0 = no symptoms
1 = few symptoms
2 = a moderate number of symptoms
3 = a great deal of symptoms

The SS scale score is the sum of the severity of the 3 symptoms (fatigue, waking unrefreshed, cognitive symptoms) plus the extent (severity) of somatic symptoms in general. The final score is between 0 and 12.

* Somatic symptoms that might be considered: muscle pain, irritable bowel syndrome, fatigue/tiredness, thinking or remembering problem, muscle weakness, headache, pain/cramps in the abdomen, numbness/tingling, dizziness, insomnia, depression, constipation, pain in the upper abdomen, nausea, nervousness, chest pain, blurred vision, fever, diarrhea, dry mouth, itching, wheezing, Raynaud's phenomenon, hives/welts, ringing in ears, vomiting, heartburn, oral ulcers, loss of/change in taste, seizures, dry eyes, shortness of breath, loss of appetite, rash, sun sensitivity, hearing difficulties, easy bruising, hair loss, frequent urination, painful urination, and bladder spasms.

The American College of Rheumatology Preliminary Diagnostic Criteria for Fibromyalgia and Measurement of Symptom Severity[33]

Consequently, fibromyalgia diagnosis in practice has often been a symptom-based diagnosis.

In developing new diagnostic criteria, 2 variables that best defined fibromyalgia and its symptom spectrum are Wide Spread Pain Index (WPI) and the composite Somatic Symptom (SS) scale. The WPI, which strongly correlated with the tender point count and the SS scale, best identified patients, diagnosed with the ACR classification criteria. The SS scale, a composite variable composed of physician-rated cognitive problems, unrefreshed sleep, fatigue, and somatic symptom count to measure fibromyalgia symptom severity. The WPI and the SS scale together are used to define fibromyalgia diagnostic criteria: (WPI -7 AND SS -5) OR (WPI 3–6 AND SS -9). The SS scale alone provides a measure of fibromyalgia symptom severity.

ACR Diagnostic criteria -2010

Management:

A. Non Pharmacologic

B. Pharmacologic

A. Non-Pharmacologic

1. Aerobic Exercise

Aerobic-only training has beneficial effects on physical function and some FM symptoms. Strength-only training may improve FM symptoms.[34] The group exercises 1-3 times per week, with sessions from 25 minutes to 90 minutes and the duration of the programmes from 6 weeks to 6 month have been tried. The programmes were low-intensity dynamic endurance training with a working rate at 50-70 % of maximal heart rate in relation to age. Improvements are seen on other parameters such as improvement in the number of tender points, in total myalgic scores and reduced tender point tenderness, improved aerobic capacity, physical function, subjective well-being and self-efficacy.[35] Low-to-moderate intensity aerobic exercise and strength training are strongly recommended. Chiropractic, laser therapy, magnetic field therapy, massage and transcranial current stimulation are not recommended.[36] The Ottawa Panel recommends strengthening exercises for the management of fibromyalgia as a result of the emerging evidence.[37]

Exercise for fibromyalgia (Cochrane Database of Systematic Reviews, published: 2007)

This summary of a Cochrane review presents what we know from research about the effect of exercise for fibromyalgia. The review shows that in people with fibromyalgia:

- moderate intensity aerobic training for 12 weeks may improve overall well-being and physical function; moderate intensity aerobic exercise probably leads to little or no difference in pain or tender points.
- strength training for 12 weeks may result in large reductions in pain, tender points and depression, and large improvement in overall well-being but may not lead to any difference in physical function.
- the exercise programs that were studied were safe for most. The intensity of aerobic exercise training should be increased slowly aiming for a moderate level. If exercisers experience increased symptoms, they should cut back until symptoms improve. If in doubt about adverse effects, they should check with a health care professional.
- it is not known whether exercise training for more than 12 weeks improves other symptoms such as fatigue, stiffness or poor sleep. Many people with FM do have difficulty staying on an exercise program. Strategies to help individuals exercise regularly were not measured in these studies.
- it is not known whether flexibility training, programs combining types of exercise, and programs combining exercise with non-exercise strategies improve the symptoms of fibromyalgia.

In the studies, aerobic exercises were done for at least 20 minutes once a day (or twice for at least 10 minutes), 2 to 3 days a week. Strength training was done 2 to 3 times a week and with at least 8 to 12 repetitions per exercise. The exercise programs lasted between 2 ½ to 24 weeks.

When compared to no exercising, aerobic exercise training may:

- improve overall well-being by 7 points on a scale of 0 to 100.
- improve ability to perform aerobic exercise; by using 2.8 ml/kg/minute more oxygen when walking on a treadmill.
- increase the amount of pressure that can be applied to a tender point by 0.23 kgs/cm2 before the onset of pain.
- reduce pain by 1.3 on a scale of 0 to 10.
- have unknown effects on fatigue, depression or stiffness.

These results are based on moderate quality evidence.

When compared to no exercise, strength training may:

- reduce pain by 49 fewer points on scale of 0 to 100.
- improve overall well-being by 41 points on a scale of 0 to 100.
- lead to 2 fewer active tender points on a scale of 0-18.

There is 'gold' level evidence (www.cochranemsk.org) that supervised aerobic exercise training has beneficial effects on physical capacity and FM symptoms. Strength training may also have benefits on some FM symptoms.38

2. Massage therapy

Short term effect of massage therapy is seen. Kalichman L suggest that massage should be painless, its intensity should be increased gradually from session to session, in accordance with patient's symptoms; and the sessions should be performed at least 1-2 times a week.[39]

3. Acupuncture

No evidence of benefit resulting from acupuncture versus placebo, as a treatment for fibromyalgia has been found.[40]

4. Cognitive-behavioural therapy (CBT)

The effects of psychological treatments for fibromyalgia are relatively small but robust and comparable to those reported for other pain and drug treatments used for this disorder. Cognitive-behavioural therapy was associated with the greatest effect sizes. Psychological treatments also proved effective in reducing sleep problems, depression, functional status, and catastrophizing. These effects remained stable at follow-up. Moderator analyses revealed cognitive-behavioural treatment to be significantly better than other psychological treatments in short-term pain reduction. Glombiewski JA et al 2010.[41]

CBT can be considered to improve coping with pain and to reduce depressed mood and healthcare-seeking behaviour in FM.[42]

5. Hydrotherapy

A meta-analysis of randomized controlled clinical trials on the efficacy of hydrotherapy in fibromyalgia syndrome has shown moderate evidence that hydrotherapy has short-term beneficial effects on pain and HRQOL in FMS patients.[43]

6. Psychological treatments

Psychological treatments are effective in reducing pain intensity for children and adolescents (<18 years) with headache and benefits from therapy appear to be maintained. Psychological treatments also improve pain and disability for children with non-headache pain. There is limited evidence available to estimate the effects of psychological therapies on mood for children and adolescents with headache and non-headache pain. There is also limited evidence to estimate the effects on disability in children with headache. These conclusions replicate and add to those of the previous review which found psychological therapies were effective in reducing pain intensity for children with headache and non-headache pain conditions, and these effects were maintained at follow-up.[44]

B. Pharmacologic

Many different types of drugs have been used in an attempt to relieve symptoms of fibromyalgia–these include antidepressants, antiepileptics, and skeletal muscle relaxants. Of the drugs in this summary, only three have been approved by the FDA for the treatment of fibromyalgia.

Pregabalin was approved in June 2007, duloxetine was approved in June 2008, and milnacipran was approved in January 2009. Cyclobenzaprine-treated patients were 3 times as likely to report overall improvement and to report moderate reductions in individual symptoms, particularly sleep.[45]

There was no significant difference between amitriptyline compared to cyclobenzaprine at 4 weeks or compared to nortriptyline at 8 weeks. It has also been found that Amitriptyline is similar to duloxetine, milnacipran, and pregabalin on outcomes of pain and fatigue.[46]

Gabapentin provides pain relief of a high level in about a third of people who take it for painful neuropathic pain. Adverse events are frequent, but mostly tolerable.[47]

Conclusion/Recommendations

FM can be mild or disabling but often has substantial emotional & social consequences. Although FM symptoms seem to remain stable over extended periods of time, several long term studies indicate that physical function & pain worsen. Despite the good results with some of the treatments described above as found in the literature search, finding a therapy with benefit for patients with FM often is an elusive goal. FM, like many other chronic illnesses, is treatable, and remission can occur in many patients who actively participate in effective disease management programs. Working with patients of FM can be frustrating but diminution or remission of symptoms is a triumph for both the patient and the practitioner.

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Consumer Protection Act and Medical Practice

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Abstract

The relationship between doctor and patient is based on trust and confidence. Lucky doctors of the past were treated like God and people revered and respected them. With the passage of the Consumer Protection Act, 1986, patients often address their grievances to the various redressal forums having jurisdiction to hear complaints against professionals for deficiency in service giving rise to a large number of complaints against doctors. Whenever a person comes to a doctor for medical advice and treatment, the doctor must bring to his task a reasonable degree of skill and knowledge and must exercise a reasonable degree of care. Failure to exercise reasonable care and skill may give a cause of action for negligence and the patient may on that basis recover damages from his doctor.

Keywords: *Consumer, Consumer Protection Act, Medical negligence.*

Introduction

The relationship between doctor and patient is based on trust and confidence. Lucky doctors of the past were treated like God and people revered and respected them. Today, we witness a fast pace of commercialization and globalization on all spheres of life and the medical profession is no exception to these phenomena. As a result, it was increasingly felt that medical treatment should also be made answerable; therefore, doctors were covered by various laws.[1] Lately, Indian society is experiencing a growing awareness regarding patient's rights. This trend is clearly discernible from the recent spurt in litigation concerning the medical professional for the suffering caused due to medical negligence arising out of the doctor-patient relationship.[2] Not only civil suits are filed, the availability of a consumer forum for grievance redressal having jurisdiction to hear complaints against professionals for deficiency in service has given rise to a large number of complaints against doctors.[3]

In India, the Consumer Protection Act (CPA) was enacted in 1986, for better protection of the interests of consumer grievances and it came into force on 1 July, 1987.[4] Initially, the medical profession does not come under the purview of the Act. It was only in 1995, the Supreme Court of India in Indian Medical Association VP Shantha decisively included the health profession under the CPA.[5] It includes all medical services offered by the private and government doctors and hospitals. It exempts only those hospitals and medical practitioners of such hospitals, which offer free service to all patients at all times. Service rendered by doctors and hospitals where charges are required to be paid by persons availing of service but certain categories of persons who cannot afford to pay are rendered service free of cost would also fall within the ambit of the Act.[6]

Consumer protection Act[4]

Who can file a complaint?

Any "person" who hires or avails of any services for a consideration which has been paid or promised or partly paid and partly promised and includes any beneficiary of such services other than the person who hires or avails of the services for consideration paid or promised, or partly paid and partly promised, or under any system of deferred payment, when such

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services are availed of with the approval of the first mentioned person.

When a complaint can be made?

A case can be filed when there is defect and deficiency of service. Defect means any fault, imperfection, shortcoming in quality, quantity, purity or standard. Deficiency means any fault, imperfection, shortcoming or inadequacy in the quality, nature and manner of performance.

Where to file a complaint?

A complaint can be filed in any of the Consumer Disputes Redressal Agencies (CDRA).

Structure of Consumer Disputes Redressal Agencies (CDRA)

Redressal Forums have been established at three different levels: District Forum, State Commission and National Commission.

District Forum: It consists of:

1. A person who is, or has been, or is qualified to be a District Judge, its President.
2. Two other members who shall be persons of ability, integrity and standing and have adequate knowledge or experience or have shown capacity, in dealing with problems relating to economics, law, commerce, accountancy, industry, public affairs or administration, one of whom shall be a woman.

   The District Forum has jurisdiction to entertain complaints where the value of services and compensation claimed does not exceed Rupees 20 Lakhs.

State Commission: It consists of -

1. A person who is or has been a Judge of a High Court, who shall be its President.
2. Two other members (as for District Forum).

The State Commission has jurisdiction to entertain -

1. Complaints where the value of services and compensation claimed exceeds rupees 20 lakhs but does not exceed rupees 1 crore.
2. Appeals against the orders of any District Forum within the state.
3. Revision petitions against the District Forum.

National Commission: It consists of -

1. A person who is or has been a Judge of the Supreme Court, who shall be its President.
2. Four other members (qualifications: As for District Forum /State Commission).

The National Commission has jurisdiction to entertain-

1. Complaints where the value of services and compensation claimed exceeds rupees 1 crore.
2. Appeals against the orders of any State Commission.
3. Revision petition against the State Commission.

Procedure of making complaint by the Plaintiff / Consumer

- No prescribed form needed. Complaint can be filed on plain paper.
- No lawyer or court fee is required.
- It can be filed by consumer himself, by recognised consumer association on behalf of consumer or by legal heir in case of death of the consumer.
- Six copies of the complaint are to be sent.
- Complaint can be filed personally or even by post to the appropriate forum.

Plaintiff has to make complaint in the following manner

- The name, description and the address of the complainant.
- The nature of the complaint with full details.
- Name and address of the opposite party.
- Nature of the loss / injury / defect / deficiency.
- Documents in support of the allegations contained in the complaint.
- Nature of compensation and amount claimed.

Procedure on receipt of Complaint

The Forum shall on receipt of a complaint –

1. Refer a copy of such complaint to the opposite party directing him to give his version of the case within a period of 30 days or such extended period not exceeding 15 days as may be granted by the District Forum.
2. If analysis or test is needed to confirm the alleged defect, the sample is sent to appropriate laboratory. The maximum period to get the result of test or analysis granted by the forum is 45 days.
3. The Forum may, at any stage, adjourn the hearing of the complaint but not more than one adjournment shall be given and the complaint should be decided within 90 days from the date of notice received by the opposite party where complaint does not require analysis or testing of the goods and within 150 days if it requires analysis or testing of the goods.

Findings of the Forum

If, after the proceedings, the Forum is satisfied that any of the allegations contained in the complaint about the services are proved, it shall issue an order to the opposite party directing him to do one or more of the following things:

1. To return to the complainant the charges paid.
2. To pay as compensation to the consumer for any loss or injury suffered by the consumer due to the negligence of the opposite party.
3. To remove the deficiency in the services in question.
4. To provide for adequate costs to parties.

Appeals

Any person aggrieved by an order made by the District forum, State Commission and the National Commission may appeal against such order to the State Commission, National Commission and the Supreme Court respectively, within a period of 30 days. Any appeal made after 30 days may be entertained by the concern forum if it is satisfied that there was sufficient cause for not filing it within that period.

Before making an appeal, the appellant should deposit 50% of the amount ordered by the forum or Rs 25000 in case of State Commission and Rs 35000 in case of National Commission whichever is less.

Limitation Period

The Forum shall not admit a complaint unless it is filed within 2 years from the date on which the cause of action has arisen. In case there are sufficient grounds for not filing the complaint within such period, extension may be granted.

Dismissal of frivolous or vexatious complaints

When a complaint is found to be frivolous or vexatious, the Forum shall dismiss the complaint and make an order that the complainant shall pay the opposite party such cost, not exceeding 10,000 rupees.

Penalties

When a person fails or omits to comply with any order made by the Forum, such person shall be punished with imprisonment for a term which shall not be less than one month but which may extend to three years, or with fine which shall not be less than 2,000 rupees but which may extend to 10,000 rupees or with both.

Consumers' advantages in Consumer Protection Act[7]

- No court fees required.
- Easy to file a case.
- Speedy disposal of cases.

Disadvantages of Consumer Protection Act in medical practice

- Increase in number of frivolous cases as most doctors, in order to avoid legal hassle, prefer to settle the matter out of court and willingly pay the compensation.

- Judgment of reasonable skill and care is difficult.
- Practice of defence medicine eg advising unnecessary and costly tests, more specialist referrals than needed, etc.
- Deteriorating doctor-patient relationship.
- No scope for testimony by medical expert as the district or state commission comes to its own conclusion, where justice can be miscarried.

Medical negligence

A person who holds himself out ready to give medical advice and treatment impliedly undertakes that he is possessed of skill and knowledge for the purpose. The practitioner must bring to his task a reasonable degree of skill and knowledge and must exercise a reasonable degree of care.

In the case of Dr. Laxman Balkrishna Joshi vs. Dr. Trimbark Bapu Godbole and Anor8 it was laid down that when a doctor is consulted by a patient, the doctor owes to his patient certain duties which are: (a) duty of care in deciding whether to undertake the case, (b) duty of care in deciding what treatment to give, and (c) duty of care in the administration of that treatment. A breach of any of the above duties may give a cause of action for negligence and the patient may on that basis recover damages from his doctor.

Liability arises if the following are satisfied -

- Duty : existence of duty of care by doctor
- Dereliction: failure on part of doctor to maintain care or skill.
- Direct causation – failure to exercise duty of care leading to damage.
- Damage – damage which results must be reasonably foreseeable.

Even if a doctor is negligent, patient cannot sue him if no damage occurred. Patient must suffer loss which can be measured or compensated in terms of money e.g. loss of earning, expenses for treatment, reduction in expectation of life, etc.[9]

Test for standard of care

Bolam's test is to be applied to determine the standard of care which is required by medical practitioners in an action for damage of negligence. In the case of Bolam V. Friern Hospital Management Committee, McNair, J. summed up the law as the following:

"The test is the standard of the ordinary skilled man exercising and professing to have that special skill. A man need not possess the highest expert skill: It is well established law that it is sufficient if he exercises the ordinary skill of an ordinary competent man exercising that particular art. In the case of a medical man, negligence means failure to act in accordance with the standards of reasonably competent medical men at the time. There may be one or more perfectly proper standards, and if he confirms with one of these proper standards, then he is not negligent."[10]

Doctors' defence[11]

- No duty owed to the patient.
- Duty was discharged according to prevailing standards.
- Case of misadventure (therapeutic or diagnostic)
- Error of judgment.
- Contributory negligence on the part of the patient.
- Res judicata - case already decided previously by the court of law.
- Limitation of 2 years period has passed off, before the suit was instituted.

Conclusion

Doctors practising ethically and honestly should not have any reason for fear. Law whether civil, criminal or consumer law, can only set the outer limits of acceptable conduct i.e. minimum standards of professional care and skill, leaving the question of ideal to the profession itself.[12] The best way to avoid litigation is to take the following measures:-

- Good rapport with the patients and their relatives.

- Rationale management.
- Maintain complete, accurate and legible record.
- Obtain informed consent.
- Establish hospital injury prevention programme.
- Inform patients of the risks involved.
- CME of physicians.
- Medico legal seminars.

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Generic Medicines

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Abstract

There is an increasing concern that generic medicines or generic drugs are less safe and less effective than brand-name drugs in the minds of both, the prescriber and the patient. Generic medicines are those where the original patent has expired and which may now be produced by manufacturers other than the original innovator (patent-holding) company. Generic drugs may be of two types; branded and non-branded. The use of generic medicines has ensured that even developing countries have access to essential medicines which were previously inaccessible due to the high cost, thereby improving the health care of developing countries. Efforts from the drug controlling authority for quality checking of all available generic formulations is also an integral part of the success of generic substitutions.

Key words: *Generic; Medicines; Drugs; Branded; Non-branded*

Introduction

Drugs and food are essential components to the health care of the public. Recovery of ailing patients from illness is directly related to the quality of drugs they consume. Increased availability of generic drugs in our country in recent times raised concerns in the minds of prescribers and therefore to the public on the basic quality and safety on use of such drugs. Although generic drugs are widely encouraged by government, and try to persuade people to take generic versions of prescription drugs in our country, research evidence suggests some feel uneasy in using generic drugs.

We present here a brief discussion on generic drugs:

Definition: What are generic drugs?

Generic medicines are those where the original patent has expired and which may now be produced by manufacturers other than the original innovator (patent-holding) company.[1] The term "generic drug" or "generic medicine" can have varying definitions in different markets; however the term is commonly understood, as defined by the World Health Organisation (WHO) as "a generic drug is a pharmaceutical product, usually intended to be interchangeable with an innovator product, that is manufactured without a licence from the innovator company and marketed after the expiry date of the patent or other exclusive rights.[2] A generic drug is identical in its composition or active ingredient to its brand name and is used at the same strength, dose, form and route of administration and must be prescribed for the same therapeutic goal as the reference medicine but they are available at a much lower price. There may be some minor differences in the name, shape, colour, inactive ingredient or excipients, release mechanism and its packaging.[3]

Most of the therapeutically effective drugs used today, were developed around 1940-60's. They were protected by patent laws which give the innovator company exclusive right to market the drug for about 14 – 20 years, but the patent right is usually applied before clinical trials, so the effective period is mostly 7 - 12 years. Patent right is essential as it motivates pharmaceutical companies to continue research for new therapies as the huge cost incurred for the trial

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is mostly covered with benefit during the patent period. So, the costs of branded drugs are usually high. Once the drugs started getting off patent, other drug companies started manufacturing these. These were the generic formulations. These drugs were sold at prices much lesser than the original (innovator) product. The presence of these versions also made the innovator company to bring down its own price to compete with the generic version.

Types of Generic Drugs

Generic drugs may be of two types; branded and non-branded:

Branded generics also known as 'Authorized generics' are brand-name drugs sold under generic labels, manufactured by the pioneer drug firm but marketed and distributed through a subsidiary or outside generic partner. Although identical to the brand-name drug, they are priced at the same level as other generics, allowing pioneers to sell the same drug product in both the brand-name and generic drug markets.

The second type i.e, Non branded generics are those which are manufactured by companies other than the innovator company. They are usually available by their generic name but the manufacturing company may also give them their own brand name.[4]

According to the First Drug Price Competition and Patent Restoration Act of 1984, or the Hatch–Waxman Act,[4] it is mandatory that all the generic drugs have the same bioequivalence with the innovator product. Drugs are termed as bioequivalent if the rate and extent of absorption does not show significant difference or if the difference observed is intentional or are not medically significant. Hatch-Waxman Act created a new regulatory system for all drugs originally approved after 1962 wherein Abbreviated New Drug Application (ANDA) which adopts 'bioequivalence' as the new standard for generic drug approval in order to facilitate and accelerated FDA review. Thus the generic manufacturer need only to demonstrate that its product has the same active compound and basic pharmacokinetics as the brand drug and rely on the pioneer's clinical trial data to satisfy the FDA's safety and efficacy requirements without having to start from preclinical screening in animals. Thus, this speed up approval of generic drugs and also automatically brings down the cost of such drugs.

Thus generic drugs are identical or within an acceptable bioequivalent range to the brand name counterpart, considered identical in dose, strength, route of administration, safety, efficacy, and intended use. The international regulations states that generic drug may be considered equivalent therapeutically to the brand drug if it has the same efficacy and safety profile when given to patients under labelling conditions and these depends on the bioequivalence of both the drugs

Implications

The 1994 agreement of Trade Related Aspects of Intellectual Property (TRIPS), which protects trademark, copyright and notably patents for pharmaceutical products was amended by the Doha declaration by WTO in 2001 in order to protect public health especially those of developing countries by members of the WTO.[5] Thus Doha declaration recognised the need for nations to take necessary actions to lower cost of medicines and affirms the right of developing nations to authorize the production of generic versions of patented drugs and importation of patented drugs at the lowest price available. Many countries including India had promoted the use of generic drugs in the 2002.

Measures to increase the use of generics have been promoted mainly because of its cost effectiveness. Insurers and policy makers are also striving to stimulate more cost effective prescribing through the promotion of generic drug use around the world.

In developed countries, not only the prescriber but health insurance firm too are concerned with the use of generics and have been found to be the ones encouraging and requesting the prescribers to switch their patients from non-generic to generic drugs to save health care cost. The expenditure of a country is greatly influenced by the promotion of generic drugs.

Thus, the use of generic medicines has ensured that even developing countries have access to essential medicines which were previously inaccessible due to the high cost, thereby improving the health care of developing countries. Sub Saharan African countries have access to anti-retroviral drugs only after the availability of

generic formulations.[6] Thus the use of generic drugs have ensured that basic life saving drugs are available at a cost which even underdeveloped countries can afford and thereby improving world health.

Generic drugs are approved for use only after they have passed the mandatory bioequivalence study. Regulatory bodies like FDA have accepted some negligible difference in the bioavailability.[4] This supposed to be negligible difference of bioequivalence may not always be negligible in terms of therapeutic equivalence, especially for drugs which have a narrow therapeutic index or highly toxic drugs, those drugs used in patients with potentially life threatening conditions or with drugs allergy. Moreover when a patient receives generic drug, there is a high probability that he will be receiving not just one, but more than such generic formulations, thereby increasing the likelihood of having different therapeutic effect than the innovator compound. Apart from this, there can also be a general belief among the prescribers, pharmacist as well as patients that since the price is higher, the innovator brand is superior over the generics. In some instances the both prescribers and patients may agree that the brand drug which has been used efficiently for long term therapy before availability of its generic substitutes should not be changed to its generic substitutes even after it has been available. Thus, the substitution of generics maybe cost saving, but its popularity was hampered by such conditions.

India and Generic Drugs

The medical council of India in 2002 with approval from the Central government put up regulations for professional conduct, etiquette and ethics binding for all registered medical practitioners. Clause 1.5 of the regulation states that 'every physicians should as far as possible, prescribe drugs with generic names and he/she shall ensure that there is rational prescription and use of drugs to promote the use of generic medicines in Government hospital set up as well as private sectors. For the measures to be more effective, the medical council had put up a circular to all the Dean, Principals, director and president of medical colleges across the country highlighting on the above mentioned clause in the year 2012 and 2013.[7,8]

Conclusion

To Shakespeare's Juliet, a rose by any other name would smell as sweet. However, when it comes to prescription drugs, we have a lot of name. Therefore, cost effectiveness of prescription in our country greatly depends on the prescriber. At the same time, education of the pharmacist regarding substitution of generic drugs should go along with it. Moreover, efforts from the drug controlling authority for quality checking of all available generic formulations is also an integral part of the success of generic substitutions.

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Obesity Scenario in North Eastern States of India

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Introduction

Obesity is defined as an excessive accumulation of body fat that is an important risk factor for cardiovascular disease, atherosclerosis, diabetes and breast, colonic, endometrial and prostate cancers.[1-3] The World Health Organization describes obesity as ''one of today's most blatantly visible yet most neglected public health problems'' and uses the term ''globesity'' to reflect an ''escalating global epidemic of overweight and obesity''.[4] Worldwide, the rate of obesity has continued to rise at an alarming rate to such an extent that it has been described as a global epidemic and it is even replacing under-nutrition as the most significant causes of ill health.

Obesity is a disease process associated with the development of serious medical complications and increased mortality in adulthood. Childhood obesity is associated with short-term morbidity such as asthma and psychological problems. Also, childhood obesity tends to track into adulthood, meaning that subjects keep their ranking position in body mass index (BMI) distribution over time, thereby increasing the risk for chronic morbidity and mortality in adulthood. It was well established that the best index was the ratio of the weight in kilograms divided by the square of height in meters or the Quetelet Index first described by Adolphe Quetelet in 1832. He was a Belgian mathematician and statistician, who developed a passionate interest in probability calculus that he applied to study human physical characteristics and social aptitudes. The term quetelet index (weight/height2) was renamed by Ancel Keys as body mass index when he studied on "Indices of relative weight and height".[5] Now it is a popular anthropometric index used to define overweight and obesity for both children and adults. However, cut-off points are not similar for both age groups.

Definition of overweight and obesity

Adults

From the public health perspective, it is important to define cut-off points for the various anthropometric indices to achieve effective screening. According to WHO , the cut-off values of BMI for overweight and obesity among adults are >25.0kg/m^2 and >30.0 kg/m^2.[6] Similarly, the World Health Organization has recommended waist-hip-ratio (WHR) of 1.0 and 0.85 as cut-off points for obesity for males and females, waist circumference (WC) of 94 cm and 80 cm as cut-off points for central obesity for males and females respectively.[7] Later the WHO Expert Consultation proposed new BMI cut-offs to define overweight & obesity for public health action in Asia.[8] The corresponding cut-off values for overweight and obesity are BMI >23.0 kg/m^2 and >27.5 kg/m^2, respectively. The committee stated the "need to develop sex-specific waist circumference cut-off points appropriate for different populations". The details of cut-off points are shown in Table 1. Abdominal obesity is further defined as waist–hip ratio (WHR) above 0.90 for males and above 0.85 for females, or a BMI above 30.0. However, International Diabetes Federation recommended waist circumference cut-off points for South Asian, above 90 cm for men and above 80 cm for women.[9]

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Table 1: Combined recommendations of body mass index and waist circumference cut-off points made for overweight or obesity, and association with disease risk

	BMI cutoff (WHO international)	BMI cutoff for Asia Pacific Population	Obesity class	Disease risk (relative to normal weight and waist circumference)	
				Men < 102 cm	Men >102 cm
				Women < 88 cm	Women >88 cm
Underweight	<18.5	<18.5			
Normal	18.5–24.9	18.5–23.0			
Overweight	25.0–29.9	23.0–27.5		Increased	High
Obesity	30.0–34.9	27.5–32.5	I	High	Very high
	35.0–39.9	32.5–37.5	II	Very high	Very high
Extreme obesity	≥40.0	≥37.5	III	Extremely high	Extremely high

Source: Recommended by WHO (2008)4

Children

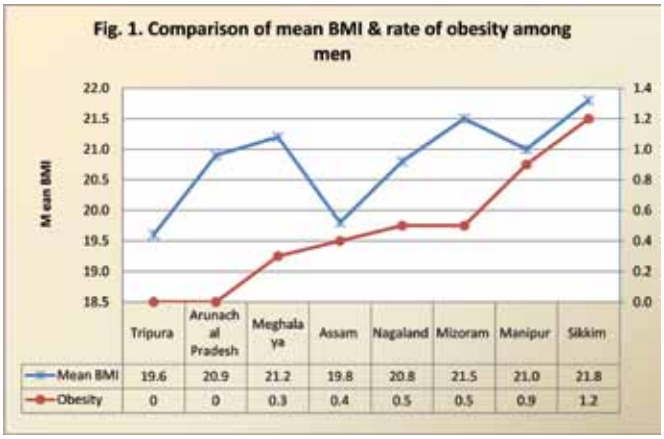
Often age and sex specific BMI >85th percentile and >95th percentile of reference standards (WHO or CDC) or BMI-for-age z-score >2 standard deviation is used to determine child overweight and obesity. An International survey proposed BMI cut-offs for child overweight and obesity cover the age range 2-18 years and are based on the BMI cut offs of 25kg/m2 and 30 kg/m2 at the age of 18 years.[10] They have been widely used but there exists no ethnic-specific cut-off values of body mass index (BMI). The study reported there is ethnic variation of BMI and overweight and obesity.[11] However, these BMI cut-offs values for child overweight and obesity was recommended by International Obesity Task Force (IOTF). A recent Indian study proposed age-sex BMI cut-off points for overweight and obesity for Indian children aged 5-18 years.[12] The study collected data from well-off families in ten cities (Bangalore, Baroda, Chandigarh, Chennai, Delhi, Hyderabad, Kolkata, Mumbai, Pune and Raipur) of five zones (East, West, North, South, and Central) in India. Age and sex specific cut-off points for overweight and obesity of both studies are given in Table 2.

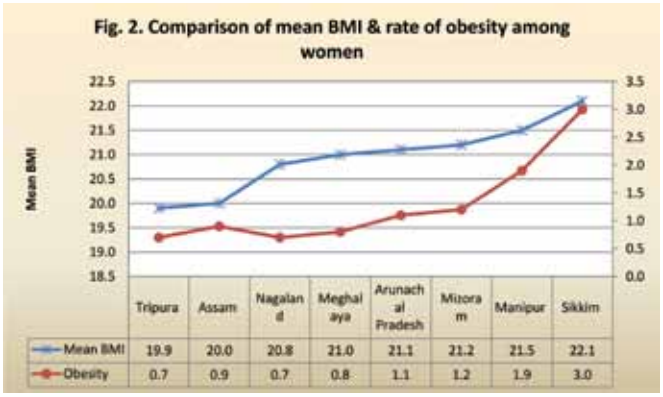
Table 2: Age-sex specific BMI Cut-off points for overweight and obesity among children.

	Cut-off values developed based on International study (Cole et al 2000)10					Cut-off values developed based on data collected from ten cities in India (Khadilkar et al 2012)12			
Age years	IOTF recommended cut-offs				Age years	Proposed cut-offs for Indian children			
	Overweight		Obesity			Overweight		Obesity	
	Boys	Girls	Boys	Girls		Boys	Girls	Boys	Girls
2	18.41	18.02	20.09	19.81					
3	17.89	17.56	19.57	19.36					
4	17.55	17.28	19.29	19.15					
5	17.42	17.15	19.30	19.17	5	15.8	15.4	17.9	17.6
6	17.55	17.34	19.78	19.65	6	16.0	15.6	18.4	18.0
7	17.92	17.75	20.63	20.51	7	16.3	16.0	19.0	18.5
8	18.44	18.35	21.60	21.57	8	16.8	16.5	19.7	19.3
9	19.10	19.07	22.77	22.81	9	17.3	17.1	20.5	20.2
10	19.84	19.86	24.00	24.11	10	17.9	17.8	21.4	21.2
11	20.55	20.74	25.10	25.42	11	18.6	18.6	22.4	22.2
12	21.22	21.68	26.02	26.67	12	19.3	19.4	23.3	23.3
13	21.91	22.58	26.84	27.76	13	20.0	20.2	24.3	24.3
14	22.62	23.34	27.63	28.57	14	20.7	20.9	25.1	25.2
15	23.29	23.94	28.30	29.11	15	21.3	21.5	25.9	26.0
16	23.90	24.37	28.88	29.43	16	21.9	22.0	26.7	26.7
17	24.46	24.70	29.41	29.69	17	22.4	22.5	27.4	27.3
18	25	25	30	30	18	23	23	28	28

Obesity scenario in North Eastern states of India

According to latest National Family Health Survey (NFHS-3) the prevalence of overweight and obesity for males of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura were 10.6%, 6.7%, 13.4%, 8.2%, 16.9%, 8.4%, 17.3% and 5.2%, respectively.[13] Corresponding rates of overweight and obesity for females were 12.5%, 7.8%, 17.1%, 8.9%, 20.3%, 10.2%, 21.0% and 5.3%, respectively. The NFHS used BMI > 25kg/m^2 and >30kg/m^2 as cut-offs to classify overweight and obesity. The relationship between BMI and rate of obesity by different states of north eastern India are presented in Figure 1 (male) and Figure 2 (female). It is observed that mean BMI is positive ly associated with obesity and inversely associated with under-nutrition.[14]





The percentage of married women aged 15-49 years who were overweight or obese increased from 11% in NFHS-2 (1998-99) to 16% in NFHS-3 (2005-06).[15,16] Similarly, rates of overweight and obesity was increased over time in North eastern states (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Sikkim) of India. It ranges from 1.3% (Nagaland) to 14.5% (Mizoram). The difference in the prevalence of overweight and obesity for Arunachal Pradesh, Assam, Manipur, Meghalaya, and Sikkim between NFHS-2 and NFHS-3 were 6.8%, 2.9%, 5.1%, 1.9% and 2.8%. The national survey also reported undernutriton is common health problem in rural areas, whereas overweight and obesity was higher in urban areas. This may be due to faulty eating habits and lesser physical activity in the urban areas. That means there is energy imbalance between energy intake and energy expenditure.

However, no epidemiological study is available from north eastern states with association between BMI/ obesity and cardio vascular disease, type-2 diabetes, hypertension and physical activity. A study from Guwahati city, Assam reported age adjusted prevalence of Type 2 diabetes and Impaired Glucose Tolerance (IGT) was 8.2% and 4%.[17] The study observed age, family history, increasing socio-economic status and decreasing physical activity were significantly associated with type-2 diabetes. Similarly BMI along with contributory factors of type-2 diabetes was significantly associated with Impaired Glucose Tolerance.[17] Although the relationship between BMI and reported morbidity tended to be U-shaped.[18] Another study from Nagaland reported the prevalence of overweight and obesity was 9.8% and 0.6% based on WHO international classification and 27.1 and 2.0 based on Asia pacific classification.[19] A recent study from Manipur documented 10% and 4% adult males and females were overweight and obesity.[20] More importantly, 42 % females were central obese as measured by WHR and 22 % males were hypertensive. They also observed there was an ethnic variation of anthropometric characteristics. According to their study, on average Manipuri people were low in height than the people of Kerala and Delhi. It was well documented that short stature is associated with hereditary factors, childhood malnutrition and socio-economic status. It was observed that average height of people in north eastern states of India is lower than the people from other region of India (NFHS-3). This may be the cause of higher mean BMI and high rate of overweight and obesity in some north eastern states of India. It is important to mention here a cm change in height BMI will be changed 0.3kg/m2 when weight remain same. Therefore, ethnic specific BMI cut-off

points are essential for public health action. Since, India has more than 600 communities residing in different geographical region; there is lot of scope for ethnic specific study in the relationship between BMI and metabolic syndrome including cardiovascular disease.

Globally an estimated 10% of school children aged between 5-17 years were overweight or obese. Many studies from different parts of India have shown that the prevalence of overweight and obesity varies between 10-30% among school children. [21-25] National Family Health survey reports under nutrition in under-five children but does not provide data on childhood overweight and obesity. It may be desirable to include this parameter (childhood obesity) for future national surveys and age group be extended up to 18 years for both boys and girls. Several studies conducted in north eastern states reported the prevalence of overweight and obesity among children and adolescent (Table 3).[26-31]

Table 3: Prevalence of overweight and obesity among children in north eastern States.

States	Year	Age group	Overweight			Obesity			Reference
			Boys	Girls	Total	Boys	Girls	Total	
Assam	2006-08	6-10	1.9	1.9	1.9	-	-	-	Sikdar 2012 26
Manipur	2005-06	12-19	4.1	4.7	4.2	1.0	0.4	0.8	Bishwalatha et al 2010[27]
Manipur	2009	8-18	2.3	5.1	3.9	-	-	-	Singh and Devi 2013[28]
Manipur	2009-10	14-19	5.5	6.7	6.1	1.2	0.4	0.7	Dkhar and Singh 2012[29]
Meghalaya	2011-2012	6-18	1.3	6.0	3.4	0.2	0.7	0.4	Bisai 2012[30]
Nagaland	Not available	8-15	2.1	2.5	2.3	-	-	-	Longkumer 2013[31]

Bishwalatha et al reported the prevalence of overweight and obesity was 4.2% and 0.8%.[27] According to their study obese mother, watching television more than 2 hours, higher family income and no eating vegetables had 1.9, 2.0, 5.8 and 2.3 times greater risk of developing obesity. The study also noted, eating between major meals was an important predictor of low BMI. However, BMI is associated with age and income of the household.[18] A study conducted in urban area of Manipur reported 3.9% overweight among Meitei children.[28] Another study reported high prevalence of overweight and obesity (6.7%) than the study collected data during 2005-06 (Table 3).[29] From those studies it is observed that there is 2% increase in the rate of overweight among Manipuri adolescents over the period of three years. Similar increasing trend of childhood overweight and obesity was observed different parts of the world. However, there are number of limitations existed between studies. The most important factors are sampled size, socio-economic status and techniques applied for data collection. Another two studies conducted in Assam and Nagaland documented lower prevalence of overweight with no sex differences.[26,31] While, a school based study from Meghalaya reported girls were significantly more overweight than their boy's counterpart.[30] In general, the prevalence of obesity among children in north eastern states is low. The possible reasons for this include a more traditional low-fat diet, less exposure to sedentary past-times and a greater time spent playing outdoors.[27]

Several published literature on Asian populations suggested the need for population- specific cut-off points of BMI. Since, Asian Indians have a high BMI and abdominal obesity and excess fat.[32,33] In general, BMI varies in two conditions, accumulation of excess fat mass and or lean body mass. For example, body builder have higher lean body mass than fat mass. The normal range of percent body fat of male and female is 15-25% and 15 -30%, respectively. The percent body fat above upper limit of normal range i.e. >25% for male and >30% for female is termed as obesity. However, calculation of body fat percent is not easy for common people. Therefore, application of BMI and waist circumference is easier to classify people as overweight and obese.

A study showed that by maintaining diet and physical activity in the home environment itself was sufficient to stop weight gain and normalize key metabolic indices for prevention of diabetes, hypertension and atherosclerosis.[34] The classroom-based approach

is easier to implement and uses fewer resources. Population based approach is one of the ways of early primary prevention of CVD in both children and adults.[35] A study from Manipur showed the prevalence of overweight and obesity was higher among adolescent than preadolescent.[30] Increasing overweight and obesity among youths implies a need to focus on primary prevention. Strategies aiming at reduction of sedentary behaviour and at an increase of physical activity may be fruitful in preventing childhood obesity.[36] In conclusion, this review provides evidence that, in general, population of north east India is experiencing critical health problem; a double burden of under nutrition and obesity. Though the prevalence of overweight and obesity is low, the increasing trend is a definite cause of concern.[15,16,28,29] Therefore, it calls for formulation of effective health promotion and intervention strategy based on these studies before the prevalence of obesity becomes alarming in this region. Improvement of health status of children is of vital importance from public health point of view at the national level. Overweight and obesity in children is a cause of growing concern vis-a vis under nutrition.

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Case Report

Bilateral Symmetrical Lissencephaly with Pachygyria : A Case Report

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Abstract

Lissencephaly is a rare developmental disorder characterized by absence of cerebral convolutions. Pachygyria (broad gyri) or agyria (no gyri) are terms used to describe appearance of cerebral surface. These conditions are a part of congenital cortical malformations and results due to arrest of brain development before third or fourth month of gestation. Patients suffering from these conditions presents with significant developmental delays which further depends on the degree of malformation. The major MRI findings during the evaluation of our case were smooth gyral pattern with thickened cortex, thinning of periventricular white matter and prominent VR (Ventricular) spaces. Lissencephaly and pachygyria are seen to be associated. Chromosomal abnormalities LIS 1 (chromosome 17) defect may be a cause of these disorders or it may develop as an idiopathic condition.

Keywords: *Lissencephaly, Pachygyria, Smooth gyral pattern, LIS 1.*

Introduction

Lissencephaly or smooth brain is a rare congenital disorder known to be caused by defective neuronal migration during early third or fourth month of gestation resulting in lack of development of sulci and gyri. This condition is usually associated with pachygyria (broad gyri) or agyria (no gyri).[1] These spectrums of disorders may be idiopathic, may be seen associated with insult in early pregnancy or may be due to chromosomal disorders (LIS 1). The malformation starts late in gestation at 12-24 weeks, because of neuroblastic migration not proceeding completely to the superficial layers of cortex.[2] Defective neuronal migration in these groups of disorders may be seen on MRI (Magnetic Resonance Imaging) as smooth brain surface, decreased white matter with thick brain cortex, broad or absent gyri with shallow sulci and ventriculomegaly.

We are hereby, reporting a case of bilateral symmetrical extensive lissencephaly with pachygyria which was evident on MRI.

Case Report

A three- year- old female child with complaints of delayed motor milestones reported to the out patient department, Department of Pediatrics, NEIGRIHMS, Shillong. The newborn with a history of home delivery at term presented with delayed speech and visual impairment. The patient had a history of delayed crying after birth. Breast feeding was normal. At 1 month of age the baby developed high degree fever and convulsions for which she was admitted in hospital for 1 month and also admitted several times for fever and convulsions thereafter. The baby was born of a non-consanguineous marriage, the mother being a 34 year's old 5th gravida delivered 3 years back. During antenatal period the pregnancy was monitored regularly and was uneventful with no history of any maternal illness during the antenatal period. There is no history of any drug intake during pregnancy except for iron-folic acid supplementation, 2 doses of TT

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injections. There is no history of any neonatal death in the family. On examination the baby could not recognize her mother; could not hold head properly and was not able to sit. Speech and language evaluation revealed that even though vocalization was present the baby could not speak words. The baby could recognize familiar voices and could indicate her needs through differential cry. Ophthalmic examination revealed a normal fundus which was not reacting to light and eye movements were impaired revealing signs of cortical blindness. Spasticity was observed bilaterally, being more prominent in the lower limbs. Due to financial constrains of the patient chromosomal analysis to rule out LIS-1 syndrome could not be done. MRI done revealed thickening of cortex, more prominent in parieto-occipital and temporal regions with thinning of periventricular white matter and prominent ventricular spaces. A diagnosis of bilateral symmetrical extensive lissencephaly with Pachygyria was made.

Discussion

Pachygyria (incomplete lissencephaly) is probably a form of lissencephaly in its lesser form, having the same cortical pattern. The term "lissencephaly" was introduced by Owen to describe the flat, smooth malformed brain in humans to distinguish it from the normal smooth brain found in lower animals.[3] It is characterized by short, broad, fat gyri caused by abnormal sulcation and gyration of the cortical mantle[2]. The exact distinction between the two entities is ambiguous.[3, 4] At its extreme, pachygyria may present with no sulcation at all creating a smoothly oriented hourglass configuration to the brain.[2]

These forms of cortical dysplasias, such as agyria, lissencephaly, pachygyria and neuronal heterotopias (disorganized brain tissue) are common neuro-pathological findings in newborns with intractable epilepsy and mental retardation. Cortical dysplasias may be a result of environmental factors such as cytomegalovirus infections or may be seen associated with certain genetic abnormalities. Association of X-chromosome is seen more commonly with patterns effecting frontal lobe whereas chromosome 17 associated patterns affects parietal lobe more[2]. In our study due to financial constrains of the patient the genetic study could not be done but Chromosome 17 defect was suspected as the parieto-occipital regions were more involved (Figure 1). Cortical dysplasias may again be seen associated with a number of specific syndromes[5]. Two clinic-pathological types have been identified.[6] Type I lissencephaly is characterized by a thick cortex with four rather than six layers of neurons, and it can be seen associated with phenotypes such as the Miller–Dieker syndrome (17p13.3monosomy) or the Norman–Roberts syndrome. Type II lissencephaly is pathologically characterized by a disorganized, unlayered cortex, hydrocephalus is common feature, and clinically it presents as Walker–Warburg syndrome[7]. In both cases, areas of thick cortex (pachygyria), enlarged ventricles with decreased myelination are present. Details of the pathogenesis still remain provisional. However, cortical and sub-cortical laminar necrosis in the fourth month of fetal life was suspected to be causing the defective neuronal migration which may be attributed to intra uterine hypoxia or perfusion failure.[8]

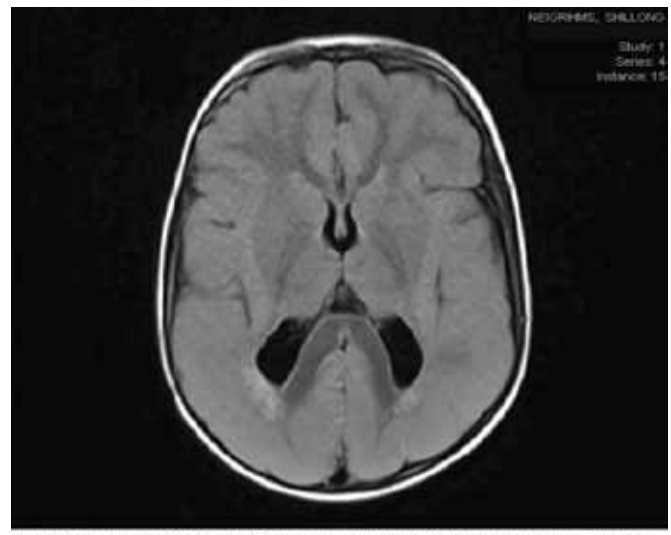

Fig. 1 Photograph of MRI, showing lissencephaly with Pachygyria more prominent in parieto-occipital and temporal regions

Dysplasia like Lissencephaly and Pachygyria are rare disorders. MRI is one of the most effective diagnosis tool in post-natal life, has the potential to investigate theses congenital disorders.[9] Although there is no specific treatment or cure for it, prevention during early pregnancy using trans-vaginal ultrasound in high risk cases, supplemental with MRI and doing MRI, particularly when a newborn presents with mental retardation or epilepsy can circumvent the existing disease burden in long term. Recurrence risk further should be addressed in confirmed cases by detailed cytogenetic analysis and genetic counseling.

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Case Report

Non Traumatic Metallic Foreign Body of Oral Cavity: Unusual Presentation: A Case Report

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Abstract

Foreign bodies in the ear, nose and throat still remains one of the commonest Otorhinolaryngological emergencies especially in children. Here a case has been reported who presented with foreign body of oral cavity with metallic rod, an unusual location which did not caused any injury but required removal under General Anaesthesia.

Key words: *Metallic foreign body, Oral cavity, Non traumatic*

Introduction

A foreign body (Latin: corpus alienum) is any object originating outside the body. Of all specialties, otorhinolaryngology covers the greatest number of natural body orifices, making foreign bodies a common diagnosis. Foreign bodies of the ear canal and nose often occur in children and are easily accessible during physical examination.[1] but the oral cavity is considered a place where foreign bodies are rare because of its structural and functional features. The types of foreign body depend on location and age of the patients.[2] Whatever the location, the most dreaded outcome of the event is seen when the foreign body is lodged in the air or food passages that may require immediate intervention.[3] Here we present 1 case with a foreign body iron rod in the oral cavity and oropharynx following fall which didn't cause any trauma and complications but required removal under General anaesthesia.

Case Report

A 3- year- old male child was brought to the emergency room with a history of fall from bed of about 2 feet height with metallic rod in mouth while playing with sibling. There was no history of bleeding per mouth but he had one episode of nose bleeding following fall which stopped by itself. Examination revealed a straight iron rod projecting outside the right side of angle of mouth (Figure 1). The length of exposed rod outside oral cavity was 2.5 cm.

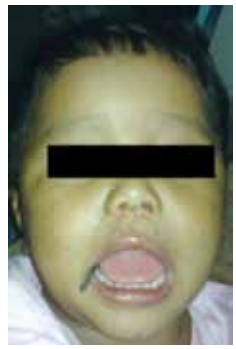

Figure 1: Foreign body iron rod protruding outside oral cavity

At the time of presentation child was conscious, hemodynamically stable without any neurological deficit. There was no trismus but child was not cooperative enough to allow proper and complete examination of oral cavity and oropharynx. However we noticed that iron rod was located lateral to tongue in the floor of oral cavity, but we could not assess the length of rod and was unable to locate distal end also. Interestingly there was no sign of oral bleeding.

X-ray soft tissue neck AP and lateral view was done immediately and it showed a radioopaque 'J' shaped

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foreign body in oral cavity with shorter curved limb pointing to floor of mouth and limited to oral cavity and oropharynx (Figure 2 and 3).

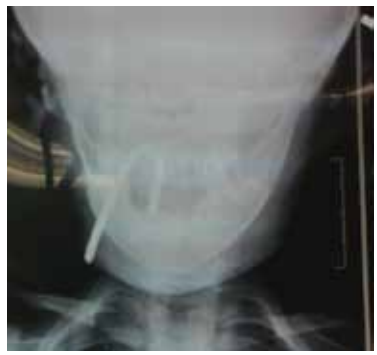

Figure 2: AP view X-Ray soft tissue neck

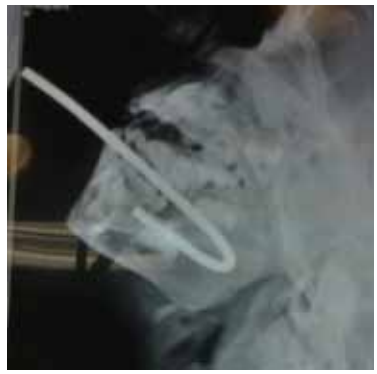

Figure 3: Lateral view X-Ray soft tissue neck showing 'J' shaped foreign body limited within oropharynx

The child was taken to the operation theatre and examined under General anaesthesia. Oropharynx could then be examined and it showed the friendly foreign body iron rod sitting silently in the right valleculla without causing any local injury. Examination of rest of oral cavity and pharynx didn't reveal any mucosal laceration or second foreign body. Iron rod was found to be of 'J' shape of length 8cm and shorter limb was 3 cm (Figure 4). Post-operative period was uneventful and was discharged next day.

Figure 4: 'J' shaped metallic rod with measurement after removal.

Discussion

The otorhinolaryngologists deal with a major parcel of natural orifices by which the foreign bodies may be introduced, such as ear, nose and mouth. Foreign bodies are more frequent in children, particularly in the 2-5 years age group, nose is the most common site followed by ear and throat.[4]

Children may suffer oropharyngeal laceration or puncture wounds when they fall with an object such as stick, stapler pin, tooth brush, fork or metal rod placed in mouth while playing.[5,6,7] The management of these patients depends on the size, characertistics, location of injury and neurologic sign.[6] Common areas of injury are superior to tonsil and the posterior pharyngeal wall, with other common sites including dorsum of tongue and palate.[8]

Here the child didn't have any injury, most probably because of the 'J' shape of the metallic rod which prevented any penetrating injury. But patient required removal of the foreign body under General anaesthesia.

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Case Report

Multiorgan Dysfunction Syndrome Following Consumption of Fish Gall Bladder: A Case Report

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Abstract

A case of multiorgan dysfunction syndrome (MODS) with pancreatitis developing after consumption of fish gall bladder as a food item is reported here from Meghalaya. The patient recovered fully with conservative treatment. The risk of multiple organ dysfunctions following ingestion of fish gall bladder as an alternative medicine is highlighted.

Keywords: *Multiorgan dysfunction syndrome, acute kidney injury, acute tubular necrosis, fish gall bladder.*

Introduction

Rohu (Labeo Rohita) is a species of fish of carp family, found in fresh water in South Asia. It is treated as a delicacy in India, Bangladesh and Nepal. It is usually eaten either deep fried or in a sauces with spices, but in north eastern part of India many people believe that fish gallbladder of carp variety is good for health. It is a common observation that people in this part of India take fish gallbladder as remedies for fever and as a food supplement to improve strength. But sometimes it may cause acute kidney injury and toxic hepatitis.[1] There are several case reports of acute renal failure and hepatitis following ingestion of fish gall bladder from different part of the world.[1,2,3] Few cases were also reported from the north-eastern India (Assam and Manipur).[4,5] In these case reports patients developed acute renal failure following ingestion of gall bladder of grass carp variety of fish. The present case report is about a case that developed multiple organ dysfunction with pancreatitis following ingestion of gall bladder with its content of Rohu fish that also belong to the carp family to which grass carp belong.

Case Report

A 50-year-old male was admitted in North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS), Shillong, Meghalaya on 28th June 2013 who was treated for malaria few weeks back. Patient was referred from civil hospital with a diagnosis of Acute Kidney injury with altered sensorium with history of ingestion of large amount of gall bladder of Rohu (Labeo Rohita) fish with bile, in dinner 4 days back. On next day early morning he started having vomiting and pain abdomen. He vomited several times in the evening and became unconscious, where by he was taken to local hospital from there, he was shifted to civil hospital and later on was shifted to NEIGRIHMS after 2 days.

In Emergency Department patient was found to be agitated and restless complaining of pain abdomen. Physical examination on admission revealed moderate dehydration, icterus was present, but no pallor and oedema. Vital recorded: pulse-112/min, BP-150/100 mmHg, SpO2-94%, temperature 100˚F. Systemic examination finding was normal except for tenderness over upper abdomen.

Emergency laboratory investigations showed blood urea -334mg/dl, serum(Sr) creatinine - 4.1mg/dl, total bilirubin-10.7mg/dl, direct bilirubin-6.3mg/dl, indirect bilirubin-4.4 mg/dl, SGOT- 190U/L, SGPT- 121U/L,

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Alkaline phosphatase-200U/L, Sr amylase- 862U/L, Sr Lipase- 1989U/L, Sr Mg 3.8 mg/dl, Sr. phosphate-5.1 mg/dl, Sr uric acid 15.9mg/dl, Sr. potassium-4.8mmol/L, Sr. sodium-144mmol/l, Sr calcium 1.02mmol/l, Sr chloride-111mmol/l. Peripheral bood smear for malarial parasite -negative. Hemoglobin-10.6gm/dl, ESR-38 mm at end of first hour, Total leucocyte count-11800/cumm, Differential count-Polymorphs 60%, Lymphocytes 32%, Monocytes -06%, Eosinophils- 02%.

Ultra sonogram abdomen was done and showed increased echo texture of both kidneys with normal collecting system. Patient was managed conservatively. Urine output was > 2 litres per day on first 3 days, later also urine output was adequate. On day 3 of admission repeat investigation shows, blood urea-106mg/dl, Sr.creat-1.6, total bilirubin -5.4mg/dl, direct bilirubin-2.8mg/dl, SGOT-460U/l,SGPT-676U/L, Sr. Alkp-557U/L, Sr. amylase-1219U/L, Sr lipase-2920U/L, blood LDH-563 mg/dl, Sr. uric acid-5.3mg/dl. On day 7 of admission investigation shows- blood urea-35mg/dl, Sr. creat-1.2mg/dl, total bilirubin -2.9mg/dl, direct bilirubin-1.3mg/dl, indirect bilirubin-1.6mg/dl, Sr.amylase-815U/L, Sr. lipase-1749U/L. Neither Renal biopsy was done nor patient received any dialysis. Patient was managed conservatively for all clinical problems and was discharged after 8 days of hospital stay and advised for follow up in General Medicine OPD. On follow up in medicine OPD, patient had normal renal and liver functions without any other complication.

Discussion

Fish gall bladder of carp variety associated acute kidney injury, hepatitis and multiorgan dysfunction has been reported from different part of the globe.[1,2,3] Patients usually present with upper abdomen pain, nausea, vomiting within 5-12 hours following ingestion of gallbladder, sometimes diarrhoea may be associated.[2] Complications associated are acute kidney injury, toxic hepatitis but there are also several reports of multiorgan dysfunction syndrome.[6] Acute kidney injury may be oliguric or non oliguric, that develop after 2-3 days of ingestion of fish gallbladder.[5]

Pancreatitis is not reported to the best of our knowledge in the literature but the present case also had the feature of pancreatitis. Though renal biopsy was not done in this case, it was reported that acute kidney injury is due to acute tubular injury. Some reports mention that main site of damage is the proximal renal tubule and it is associated with simplification of tubular epithelium, focal karyorrhexsis, and intra tubular slough with mild interstitial infiltrate, Features in electron microscopy reported include decrease or disappearance in the mitochondria crista of epithelial cells in the proximal tubules and extention of the renal mesangium; swelling of glomerular cells, partial fusion of podocytes and breakage of lysosomes.[1,6] Toxin in fish gall bladder is believed to damage or break lysosomes, meanwhile inhibiting cytochrome oxidase and blocking cellular energy metabolism, so as to cause necrosis of the proximal tubular epithelial cells.[6] The toxin believed to be behind all this nephrotoxicity and hepatotoxicity is cyprinol sulphate or cyprinol, a C27 bile acid.[7] Not all patient following ingestion of fish gall bladder develop hepatitis or renal failure but only when bile is taken in large quantity or more than 2 big gallbladder with its content. Usually patients have good prognosis but there were reports of death following ingestion of fish gall bladder.[1]

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Case Report

Case Reports on Double Pylorus

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Abstract

Double pylorus is an unusual condition in which a double communication between the gastric antrum and the duodenal bulb occurs. It may be congenital, or it may be an acquired complication of peptic ulcer disease. We present two cases of double pylorus in patients presenting with dyspepsia. A review of the literature, the role of associated diseases and the role of Helicobacter pylori are discussed.

Key words: *Double pylorus; Gastroduodenal fistula; Upper digestive endoscopy; Helicobacter pylori*

Introduction

Double pylorus is a rare condition consisting of a gastroduodenal fistula extending from the gastric antrum to the duodenal bulb through an accessory canal. In the majority, it is due to a complication of peptic ulcer disease; however, it can also be congenital due to gastric or duodenal duplication.[1,2] It usually presents on the lesser curvature of the gastric antrum and on a superior wall of the duodenal bulb. It is commonly an endoscopic finding, since the clinical presentation is similar to other peptic diseases.[3-9]

In most patients, peptic ulcers respond well to medical treatment such as H2-antagonist or proton pump inhibitors, regardless of whether or not the fistula remains patent.[8]

In this article, we describe two cases of acquired double pylorus, the common associated diseases, and the possible relationship with infection by H. pylori.

Case 1

A 55-year-old male with a history of a previous gastric ulcer treated with H2-antagonist and antacid presented with epigastric pain with history of chronic NSAIDs intake. His physical examination was unremarkable.

Upper gastrointestinal endoscopy, revealed a mild erythematous antrum and the presence of two channels with access to the duodenal bulb separated by a tissue(Figure 1). The pyloric ring was normal. The channel near the greater curvature had a smaller diameter, mildly deformed with the usual contractions, suggesting that it could be the true pyloric ring. Histopathological exam was positive for H.pylori. The patient was treated for H. pylori and he was asymptomatic for 8 month till his loss to follow up.

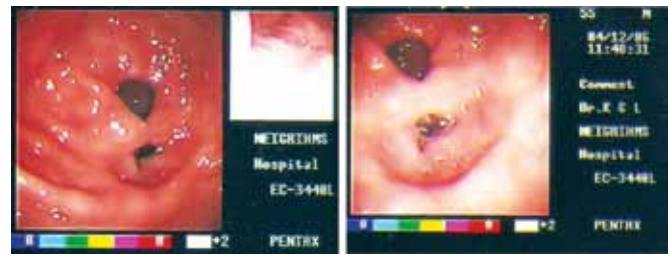

Figure 1

Case 2

A 45-year-male alcoholic presented with abdominal pain and loss of appetite. He had marked tenderness of the epigastrium otherwise his general physical and other systemic examination did not reveal any abnormality. Upper GI endoscopy showed inflamed antrum with double pyloric openings(Figure 2). Histopathological examination was negative for H.pylori. The patient was

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treated with PPI and was asymptomatic for one year after which patient did not return for follow up.

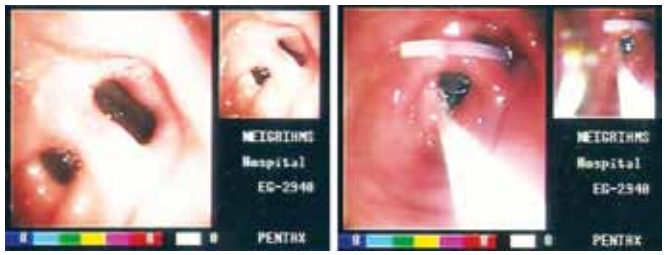

Figure 2

Discussion

The prevalence of double pylorus varies from 0.06 to 0.4%; however, its real incidence remains unknown. It occurs more often in men (2:1), as well as with other peptic diseases.[7] It is also known as peripyloric gastroduodenal fistula, double channel pylorus, pyloric duodenal fistula, and antral duodenal fistula.[3,5,7-9]

Double pylorus can be congenital or acquired. The first case of congenital double pylorus was published by Christien et al., in 1971.[3] Only few more cases have been reported since then. In congenital double pylorus, an error of canalization seems to occur. The diagnosis is based on endoscopic findings, normal histology of both channels, in the absence of an ulcer. The bridge between the two channels has normal muscle layer, differing from acquired double pylorus.

The majorities of reported cases of double pylorus is acquired and are attributed to complications of ulcers at the antrum-pyloric area or at the duodenal bulb. Most of them are consequences of gastric ulcer, and only few cases are due to duodenal ulcer.[3,7-9,10] In the first patient, the previous history of gastric ulcer and the presence of contraction of the second opening on endoscopic examination indicated that the lesion was acquired in nature.

Peptic ulcer at the gastric antrum or at the duodenal bulb causes adhesion between the adjacent walls of stomach and duodenum with posterior penetration along the muscular layer, leading to a fistulous tract that becomes epithelized.[3,7, 8,10]

Diagnosis of double pylorus is important because of the possibility of recurrent ulcers that can occur, probably due to a failure of formation of epithelium in the fistulous tract.[3,8] The reasons for development of double pylorus are not known, but many systemic diseases contributing to poor healing may be associated, such as diabetes mellitus.[4] In diabetes mellitus, the lack of microcirculation can be the cause. Other conditions such as chronic obstructive pulmonary disease, chronic renal failure, chronic rheumatism, and systemic lupus erythematosus can also be related to poor healing.[10] Additionally, drugs used for long periods by the patients, including steroids or non-steroid anti-inflammatory analgesics, may play a role in the formation of the fistula. In the first case there was history of chronic analgesic intake.

The clinical symptoms of acquired double pylorus are similar to those caused by the peptic ulcer disease and can occur before, at the time of, or even after the fistula formation. A few patients report relief of the symptoms after the fistula formation, which is attributed to the improvement of gastric emptying through the fistula, which acts as a gastroduodenostomy. On the other hand, when these symptoms persist even after the formation of the fistula, it may be implied that the accessory pylorus does not have adequate function, resulting in duodenal reflux and maintenance of the ulcer.[6,8]

The majority of the patients respond well to medical treatment, regardless of whether the fistula is open or closed. However, refractory symptoms can occur in about 20% of the patients, and surgical treatment is necessary.[8] With the use of potent inhibitors of acid production such as the proton pump inhibitors, we believe that this number may be reduced.

In the present cases the histological examination for H. pylori was positive for the first case. It is known that H. pylori play a role in the pathogenesis of the duodenal ulcer disease and in the majority of peptic gastric diseases,.H pylori may be responsible for refractory cases and the lack of healing.[8] So, sharing the opinion of other authors, we believe that the antibacterial therapy must be considered in order to decrease the risk of new ulcer formation, and also to improve the healing of the fistula.

Conclusion

Acquired double pylorus is a rare complication of peptic ulcer disease that can be associated with other diseases and H. pylori colonization. Therefore, the adequate treatment consist treatment of other conditions and H.pylori eradication.

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Case Report

Cutaneous Chromoblastomycosis: Clinicopathological Correlation in Nine cases.

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Abstract

Chromoblastomycosis is a slowly progressive cutaneous mycosis caused by pigmented (dematiaceous) fungi that occur as round, non-budding forms in tissue sections. We present nine cases of histopathologically proven cases of chromoblastomycosis who presented to the dermatology outpatient department with skin lesions. Although chromoblastomycosis is widely distributed in India, many patients remain undiagnosed. It is still a therapeutic challenge for the clinician due to the recalcitrant nature of the disease, especially in the severe clinical form. Histopathological examination and culture help in the correct diagnosis.

Key words: *Chromoblastomycosis, fungus, cutaneous*

Introduction

Chromoblastomycosis is a slowly progressive cutaneous mycosis caused by pigmented (dematiaceous) fungi that occur as round, non-budding forms in tissue sections.[1] Clinically, chromoblastomycosis can present as nodules, indurated papules or rarely psoriasiform plaques. It can be misdiagnosed as tuberculosis verrucosa cutis (TVC), sporotrichosis or even squamous cell carcinoma due to its similar appearance clinically. It is also very challenging to diagnose them histologically due to the similar picture seen in TVC and sporotrichosis. The present study was done to find out various clinical presentations and histopathological characteristics of this disease.

Case Series Report

From 2011 to 2013, 9 patients diagnosed as chromoblastomycosis based on the characteristic histological features are included in this case series. Their age ranged from 20 years to 81years. There were four females and five males. Average duration of disease in case of female and male patients was 4.2 and 3.2 years respectively. All the patients had lower limb involvement (Table 1). Most common clinical presentation was hyperkeratotic plaques (Figure 1). Microscopy of the skin lesions showed pseudoepitheliomatous hyperplasia of epidermis with collection of mixed inflammatory cells in the dermis comprising of eosinophils, plasma cells, foreign body giant cells and epithelioid granulomas (Figure 2). Copper penny bodies comprising of thick walled brown round to oval structures in varying numbers were noted in all the cases (Figure 3). Stains for sporotrichosis and acid fast bacilli were negative. All the patients improved after treatment with Itraconazole (Figure 4).

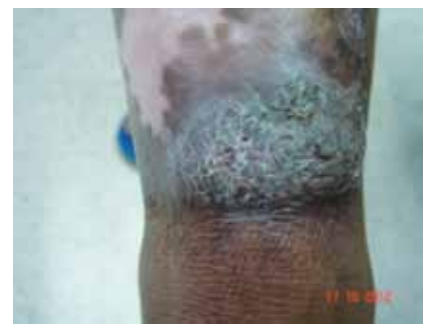

Fig. 1: Hyperkeratotic plaque

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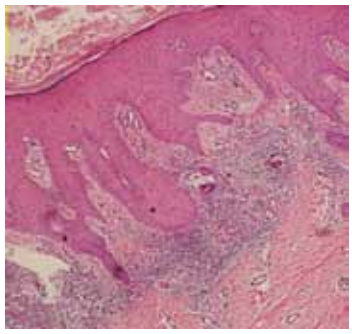

Fig. 2: Hyperkeratosis, epidermal hyperplasia and dermal infiltrate with multiple giant cells. Hematoxylin & Eosin, 40 X.

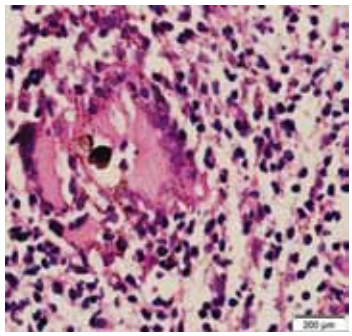

Fig. 3: Chromoblastomycosis. Copper penny bodies and inflammatory infiltrate. Hematoxylin & Eosin, 200 X.

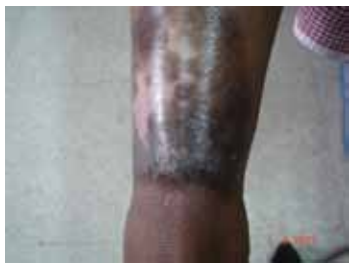

Fig. 4: Lesion in Figure 1 after treatment.

Table 1: Clinical Features of the cases

Case no	Age (years)	Sex	Clinical presentation	Duration	Differential diagnosis (clinically)
1.	32	M	Hyperkeratotic plaque on the right foot	9 years	TVC
2.	28	M	Hyperkeratotic verrucous plaque with granules on the left foot	3 years	Deep fungal infection
3.	60	F	Verrucous plaque on the left foot	2 years	TVC
4.	42	F	Hyperkeratotic plaque with granules on the left ankle	10years	1.Deep fungal infection 2.TVC
5.	81	M	Non healing ulcer on left leg	1 year	Varicose Veins
6.	20	M	Hyperkeratotic plaque with black dot over left ankle	1 year	TVC
7.	25	M	Crusted plaque with black dots on the left leg	2 years	Deep fungal infection
8.	45	F	Hyperkeratotic plaque with hyperpigmented granules over left foot	3 years	TVC
9.	38	F	Verrucous plaque on the right foot	2 years	1.Deep fungal infection 2.Sporotrichosis 3.SCC

Discussion

Chromoblastomycosis is most often caused by one of five closely related species: Phialophora verrucosa, Fonsecaea pedrosoi, F. compactum, Exophiala (Fonsecaea, Wangiella) jeanselmei, E. spinifera, Rhinocladiella aquaspera, and Cladosporium carrionii. These fungi are saprophytes and thus can be found growing in soil, decaying vegetation, or rotten wood in subtropical and tropical countries. The primary lesion is thought to develop as a result of traumatic implantation of the fungus into the skin.[1] None of our patients recalled any antecedent history of trauma at the site of lesion. The cutaneous lesions generally arise on the lower extremities and are variably pruritic papular, nodular, verrucous, or plaque-like. While some of the lesions heal with scarring, new ones may appear in the vicinity as a result of spreading of the fungus along superficial lymphatic vessels, or autoinoculation.[1] Most of our cases presented with hyperkeratotic plaques. However one patient presented with a non- healing ulcer. The disease usually occurs in the middle age group and is rarely reported in children.[2,3,4] Average age in our cases was 41.3 years. Lower limbs are commonly affected which is similar to other studies.[3,4] Histopathological features were consistent with earlier descriptions like polymorphous granulomatous infiltrate and brownish colored copper penny bodies inside the giant cells.[1] The absence of characteristic copper penny bodies does not

rule out the possibility of chromoblastomycosis. The diagnosis can be confirmed by culture in such cases.

Treatment of chromoblastomycosis is often difficult and unsatisfactory.[5] Various systemic treatment modalities are described including Itraconazole, Amphotericin B and local treatment in the form of Cryotherapy and hyperthermia.[6,7,8,9] Chromoblastomycosis must be differentiated from blastomycosis, cutaneous tuberculosis, sporotrichosis, leishmaniasis and malignancy.[10]

Conclusion

Although Chromoblastomycosis is widely distributed in India, many patients remain undiagnosed for a long time. It is not infrequently seen in this region and usually confused with other conditions like cutaneous tuberculosis and sporotrichosis. It is a therapeutic challenge for the clinician due to the recalcitrant nature of the disease, especially in the severe clinical form. Mycological confirmation is essential for confirmation of diagnosis. However the fungi are slow-growing requiring incubation for about two weeks. Proper clinical observation along with the histopathological findings helps in early diagnosis and initiation of treatment.

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Case Report

Synchronous Occurrence of Two Primary Gynecological Tumors: A Case Report

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Abstract

Synchronous occurrence of two primary tumors is rare. Endometrial and ovarian cancers are the most frequently, simultaneously occurring primary tumors. Here we are presenting, similar rare presentation of 40- year-old lady who has been referred to us with complaints of abnormal uterine bleeding and lump abdomen since one year. Patient underwent total abdominal hysterectomy and bilateral salpingoopherectomy with surgical staging. Histopathological examination showed moderately differentiated endometrioid ovarian carcinoma and endometrioid adenocarcinoma of uterus. There was no evidence of metastasis from one organ to the other.

Key words: *Synchronous, primary tumors, endometrial cancer, ovarian cancer, metastasis.*

Introduction

Simultaneous occurrence of two primary gynecological tumors is a rare phenomenon but synchronous endometrioid carcinoma of uterus and the ovary are found with reported incidence of 1.4-3.8%.[1] Such tumors may be two different primaries or a single primary with metastasis. These tumors present real diagnostic and therapeutic challenge.

Case Report

A 40- year- old lady had presented to obstetrics and gynaecology OPD with chief complaints of abnormal uterine bleeding and large abdominal mass of one year duration. She was para4 with 4 living issues. She approached a doctor earlier for her complaint, where pap smear and endometrial biopsy was taken which showed inflammatory smear and adenomatous hyperplasia with atypia respectively. USG showed increased endometrial thickness – 1.9 cm with normal ovary. She was managed conservatively and referred to our hospital one year later. At the time of admission patient was stable. On general examination pallor was present. On abdominal examination, mass of 18 weeks was palpable. Cervix and vagina was healthy on per speculum examination. On per vaginam examination, uterus was bulky and irregular firm mass was felt on right adnexa. USG showed right sided ovarian mass with internal cysts. Ca-125 was 243.24 iu/ml(Normal < 30iu/ml). Patient underwent total abdominal hysterectomy and bilateral salpingoopherectomy with staging. Per operatively right ovary was enlarged, (17-18 cm) irregular, solid and bilobular with a uterine size of 12 weeks (Figure 1&2).

Figure 1: Bilobular Right Ovarian Tumor with Enlarged Uterus

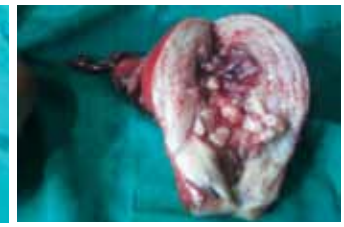

Figure 2: Cut Section of Uterus showing Exophytic Papillary Growth

On histopathological examination sections from endometrial growth, features consistent with moderately differentiated endometrioid adenocarcinoma with focal areas of poor differentiation and myoinvasion involving the inner third of myometrium, was seen. There was

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downward extension of growth up to the endocervical canal(Figure 3).

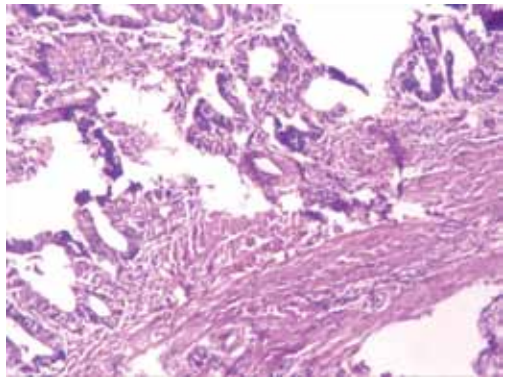

Figure 3: Endomymetrium showing Moderately Differentiated Endometrioid Adenocarcinoma (Hematoxylin & Eosin 100X)

Multiple sections from right ovarian mass shows feature consistent with moderately differentiated endomtrioid carcinoma of ovary with focal areas of poorly differentiated endometrioid carcinoma and focal area of squamous differentiation, haemorrhages and necrosis(Figure 4).

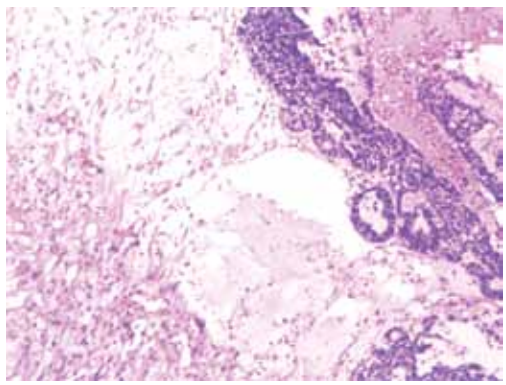

Figure 4 : Ovary showing Moderately Differentiated Endometrioid Adenocarcinoma (Hematoxylin & Eosin; 100x)

Post operative period was uneventful. Patient was referred to oncologist and received post- op radiotherapy. On follow up after 1 year patient was doing well.

Discussion

Synchronous primary tumors of endometrium and ovary are found in 5% women with endometrial cancers and 10-20% of women with ovarian cancer.[2, 3] Tthese are rare and diagnosed incidentally on specimen removed surgically.

In our case, history of precancerous adenomatous hyperplasia with atypia is strongly suggestive of primary endometrial tumor. Several gross and histological features helped to differentiate primary tumors from metastatic. Absence of high grade differentiation, deep myometrial invasion, lymphovascular invasion, oviduct affection, and absence of surface implants , bilterality and/or extra-ovarian metastasis is strongly suggestive of two different primaries

Ree YS et al reported a case of 46- year-old lady who presented with abnormal vaginal bleeding, was found to have stage 1c clear cell carcinoma of left ovary. Stage 1a borderline mucinous cyst adenoma of right ovary and stage 1b endometriod uterine tumor.[4] Patients with synchronous cervical and endometrial cancers have also been reported in literature. A case of endometrial adenocarcinoma and cervical large B cell lymphoma in 64 years old lady had been reported.[5]

Immunohistochemical studies, flow cytometry, and assessment of molecular DNA patterns to detect loss of heterozygosity may be helpful in distinguishing between metastatic and independent tumors, independent tumors, but differential diagnosis can be reasonably well determined by conventional clinical and pathological criteria on absence of these methodologies.[6] Using international federation of gynaecology and obstetrics guidelines a patient diagnosed with dual primaries confined to the ovary and uterus represent two stage I cancers. These patients have good prognosis and depending on the sub stage may not require radio or chemotherapy. By contrast primary endometrioid ovarian carcinoma and endometrial metastasis would be stage IIA cancer and primary endometrial carcinoma with ovarian metastasis would be stage IIIA and require aggressive treatment.[5]

To conclude it is necessary to identify synchronous primaries and primary with metastatic tumours correctly as staging, prognosis and further management depend upon it.

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The Hummingbird Sign: An Early Diagnostic Clue for Progressive Supranuclear Palsy (Steele-Richardson-Olszweski Syndrome)

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Introduction

Progressive supranuclear palsy, also known as Steele-Richardson-Olszewski syndrome, is an uncommon neurodegenerative parkinsonian disorder that starts in middle and late life.It is under-diagnosed not only by general physicians but also by neurologists and is frequently misdiagnosed as Parkinson's disease.

Historical Background

In 1964, Steele, Richardson, and Olszewski were the first to describe PSP when their seminal report of nine cases with autopsy confirmation was published.[1] As a result of their pioneering work, some have referred to the disease as the Steele-Richardson-Olszewski syndrome. Since that time, hundreds of additional cases have been recorded, and the disease is now a well-recognized atypical parkinsonian syndrome (or Parkinson-plus disorder). As originally described, PSP is characterized by progressive supranuclear ophthalmoplegia, gait disorder and postural instability, dysarthria, dysphagia, rigidity, and frontal cognitive disturbance.

Case History

We describe a 50- year- patient with history of tremor and slowness of movement and speech since 6 months before admission. The patient had history of generalized fatigue and difficulty in walking for the same duration .The patient also had history of frequent falls prior to admission.In addition he had history of incontinence of urine and dysphagia for the last 3 weeks. The patient was unable to walk and became bed ridden since the last 2 weeks.

On examination, he was conscious and alert . His face had a staring look. He had dysarthria and dysphagia Rigidity and bradykinesia was noted on both the extremities. Tremor was present in both the upper extremeties. Deep tendon reflexes were within normal range. Planter response was flexor bilaterally. Sensation was intact. Routine laboratory tests were unremarkable.

The patient was diagnosed as a probable case of Parkinson-plus syndrome and MRI of the brain was done. T2-weighted MRI of the brain revealed characteristic selective atrophy of midbrain with increased concavity of the lateral margin and flattening of the upper part of the superior surface, with relatively preserved pons, giving an appearance of the head and body of a hummingbird (Figure 1). This is known as 'The Hummingbird sign' or 'The King Penguin sign'.[2] The hummingbird sign is reported to have a sensitivity of nearly 100%. [2]

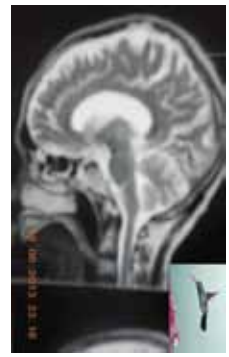

Figure 1: Mid-sagittal T2-weighted MRI of the brain showing selective atrophy of midbrain giving an appearance of the head and body of a hummingbird-hence called the "Humming bird sign"

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Discussion

Progressive supra-nuclear palsy(PSP) is difficult to detect in its initial stages. Its symptoms are not specific and often the patients are mistaken as Parkinson's disease patients, or even Alzheimer's ones. Progressive supra-nuclear palsy is an important differential diagnosis of more common idiopathic Parkinson's disease , where clinical differentiation is not straightforward and characteristic neuro-imaging often yields a diagnostic clue.

Diagnostic criteria have been developed by the National Institute of Neurological Disorders and Stroke and the Society for PSP. But all the clinical features are not present in the early stage and diagnosis of PSP is sometimes difficult.[3]

Differentiation of PSP from Parkinson's disease can also prove difficult at an early stage if the ophthalmoplegia and postural instability only develop late in the disease as can happen with some PSP patients. Parkinsonian signs are usually asymmetric in patients with Parkinson's disease. Dysphagia generally occurs early in the course of PSP in contrast to Parkinson's disease in which it appears only in middle to advanced stages. PSP progresses much faster than Parkinson's disease.[4]

Hence MRI is considered an important tool for diagnosing PSP in the early stage. MRI contributes to the clinical diagnosis of PSP even in the first 3 years of the disease course.[5]

Conclusion

MRI Brain should be done to rule out idiopathic Parkinson's disease and multisystem atrophy. Significant midbrain atrophy with no pons atrophy has been referred to as 'the Hummingbird sign' or the 'Penguin Sign'. This sign is quite useful in differentiating PSP from idiopathic Parkinson's disease and multisystem atrophy.

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1. Conception and design or acquisition of data or analysis and interpretation of data;
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The commonly cited types of references are shown here, for other types of references such as electronic media; newspaper items, etc. please refer to ICMJE Guidelines (http://www.icmje.org or http://www.nlm.nih.gov/bsd/uniform_requirements.html).

Articles in Journals

Kumar A. Indian guidelines on the management of SLE. J Indian Rheumat Assoc. 2002;10:80–96.

Books and Other Monographs

Chapter in a book: Raviglione MC, O'Brien RJ. Tuberculosis. In: Braunwald E, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL. editors. Harrison's Principles of Internal Medicine. 15 th ed. New York: McGraw Hill; 2001. p. 1024-34.

Book : Ordonez NG, Rosai J. Rosai and Ackerman's Surgical Pathology. 9th ed. New Delhi: Elsivier; 2004 .pp. 1272–5.

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Tables should be self-explanatory and should not duplicate textual material.

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