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Journal - A Medium of Communication

A medical journal is an index of any medical college/research institute which disseminates its research and innovative activities to every nook and corner of the world for ultimate benefit of humanity. The journal offers a platform to assimilate all types of research works done by medical scientists all over the world and to harbor it from laboratories to the human community with the sole aim of improving their health, thereby increasing the economic, cultural, political, and social strength of the country. The objectives of a medical journal are

- 1)**Education** : Updating knowledge and brain-dusting
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All these objectives help in practice, patient care and research. The journal serves as desk to publish articles for their career advancement and it also enkindles the spark of innovation which is basic instinct embodied in every human being and the creativity needs proper galvanization and channelization. The journal also inspires the inert but potential authors to pen down their valuable experiences, clinical skills in the forms of short communications or letter to the editor. The research is really fulfilling only when it reaches the last common man of this universe. Let us translate our scientific notions into dictums and transform the dictums into reality.

In this competitive modern scientific era the slogan "Publish or Perish" holds good as the

survival in the present scenario of increasing patient empowerment and accountability, and increased emphasis on efficiency, quality assurance and maintenance of high standard of patient care, has become inevitable. As you know writing articles in the desired format involves not the luck but pluck, imagination and endeavor. It needs zeal and zest. A blend of tenacity and tolerance is the need of the hour. Let us not look at the research work as disgusting, unyielding and unprofitable. Let us make this work as entertaining, enlightening and enchanting. Let this journal give a fresh impetus and sound clarity to all the researchers and let all of them blossom & experience the various dimensions of scientific research work.

Scientific publication is gaining momentum in India as publication has become mandatory for academic achievement in medical colleges, research institutions, corporate hospitals etc. Let us bring quality publications avoiding plagiarism and publication misconduct. There is a saying in Rigveda, viz; Let us keep the windows of our mind open. Let air and sunshine (knowledge) come from all directions. It is our first step towards the journey of thousand miles in achieving the goal of infusing the scientific intuition in the medical fraternity. Let this journal be a medium of communication maintaining harmony and integrity between editors, publishers, readers and researchers.

Let us live, achieve, experience and radiate the vast knowledge of medical research through journals. Let us explode the scientific publications for peace, progress and prosperity of the humanity and let everybody enjoy the dividends of research works published in this Medica Innovatica.

Dr. D A. Hiremath,
Editor-in-chief,

Efficacy of Echocardiographic Criteria for Diagnosis of Carditis in Acute Rheumatic Fever

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Abstract

Background: There is a great need for ECHO criteria for accurate diagnosis of carditis in acute rheumatic fever.

Aim: To propose and test the efficacy of ECHO criteria for accurate diagnosis of carditis

Material and Methods: The 333 cases underwent detailed clinical examination, laboratory tests and meticulous Echocardiographic study. Vijay's ECHO criteria for the diagnosis of carditis / subclinical valvulitis was used. 220 (66.06%) cases were both Jones' positive and ECHO positive [True +ve], 52 cases (15.61%), probably had subclinical carditis as murmur was not heard (Jones' -ve) but ECHO was positive [False - ve]. Four cases, clinically diagnosed as carditis were Jones'+ve ,but ECHO showed congenital heart disease [False +ve]. 57 cases (17.11%) were clinically , echocardiographically and Jones' negative were taken as control (True -ve). Sensitivity is 81% and specificity is 93%.

Conclusions: Precise diagnosis of both carditis /subclinical valvulitis is possible with Vijay's ECHO criteria. ECHO should be included as a major criterion in Jones' criteria.

Key words: Rheumatic carditis, subclinical valvulitis, ECHO criteria

Introduction

Acute Rheumatic Fever (ARF) and its long-term sequel is still a major burning problem in children, adolescents and young adults, in a developing country like India.[1] Among the various manifestations of ARF, carditis is the only one that can cause death during the acute stage of the disease or lead to permanent damage with long-term morbidity and mortality due to RHD and congestive heart failure (CHF). Despite the modification of Jones' criteria[2] and its revision four times, [3,4], carditis in ARF is either under diagnosed, leading to nearly 50% of established RHD not receiving prophylaxis or over diagnosed, depending on traditional characteristic auscultatory findings for diagnosis of carditis.[5,6]. Precise and early diagnosis of carditis in acute rheumatic fever is eluding the clinicians. Hence, accurate diagnosis is very essential, as timely

management can make the heart normal in 35 - 40% of cases, prevent recrudescence of rheumatic activity and further damage to the valves. Despite the fact that ECHO can help to diagnose carditis more accurately than traditional auscultatory findings[7] and can prevent both over diagnosis and under diagnosis[8], the question is being asked. "Could echocardiography have been of much help?" Albert et al say probably not, and Stollerman agree[9,10]. Unfortunately committee for Jones' criteria is skeptical about including ECHO as a major criteria for the fear of over diagnosis of carditis[11]. Therefore there is a great need for appropriate ECHO criteria for the precise and early diagnosis of both clinical and subclinical valvulitis.

Background

As a pilot study[6]we performed echocardiography in 452 consecutive patients with

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acute rheumatic fever, clinically diagnosed by the strict Jones's criteria, using the patients as part of a multi-centric and double blinded prospective study. The youngest was aged 1 year 11 months, while the oldest was a 51-year-old female. Out of the 452 cases of ARF, diagnosed by Jones's criteria though 164 cases were clinically diagnosed as carditis, only 141 cases had echocardiographic evidence of carditis (85.97%). The remaining 23 patients (14%) had functional murmurs, tachycardia, or anaemia and 2 patients also had congenitally malformed hearts. Out of 40 patients with rheumatic chorea, 28 (70%) had echocardiographic evidence of carditis or valvulitis. Polyarthralgia was seen in 213 cases (47.12%), from which only 38 patients (17.8%) had carditis clinically, albeit that 88 patients (41.3%) showed echocardiographic evidence of subclinical carditis or valvulitis. Echocardiography, when carried out in patients with acute rheumatic fever diagnosed strictly according to the Jones criterion, can avoid both overdiagnosis and underdiagnosis of carditis. A high incidence of carditis, or subclinical carditis, is detected by echocardiography when performed in patients with rheumatic chorea or arthralgia.

Aim

Our study is to propose Vijay's echocardiographic criteria and test its efficacy to make precise and early diagnosis of carditis and/or subclinical valvulitis.

Material and Methods

The 333 consecutive, suspected cases of ARF, 165 males and 168 females (M:F Ratio 1:1), from January 2005 to June 2006, underwent a detailed clinical examination; laboratory tests and meticulous echocardiographic and Doppler study with Philips Sonos 5500 machine. The data was entered in specially designed database. The thickness of anterior mitral leaflet (AML), posterior mitral leaflet (PML), tricuspid valve (TV), aortic valve (AV) were measured in mm in parasternal long axis and apical four and five chamber views. Similarly measurements were

taken by tissue harmonics. Also note was made whether the thickness of the valve was at the tip/base or through out the valve. Increased echogenicity of submitral structures, present or not, was noted. By M-Mode the excursion of AML and PML was recorded to know the mobility, whether normal/reduced or increased. Mitral valve prolapse (MVP) was looked for clinically and by ECHO. Whether the valve in MVP is thin, redundant, myxomatous with large excursion or thick valve with reduced mobility, were noted. Whether there is prolapse of AML / PML / both leaflets was noted. The chordal tear with rolled up chordae and flail valve was recorded. Similarly tricuspid and aortic valve were looked for TVP / AVP. The grade of mitral regurgitation (MR) clinically and by echocardiography was noted. Whether MR jet was central / eccentric and jet velocity was also noted. Chordal tear of AML / PML were looked for. Carefully auscultation was done for early diastolic murmur of aortic regurgitation (AR). ECHO Grade of AR was recorded. Similarly tricuspid regurgitation (TR) murmur was looked for clinically and ECHO Grade and Jet velocity were noted. Beaded appearance of mitral and tricuspid valves was carefully looked for. All the patients were carefully auscultated for pericardial rub and looked for mild / moderate/severe pericardial effusion on ECHO. Chamber dimensions and Ejection Fraction (EF%) were noted in all. Vijay's ECHO criteria for the diagnosis of carditis / subclinical valvulitis evolved, depending on the various ECHO features observed from our previous study, as shown in Table I. Finally, total ECHO Score was calculated by giving 2 points for each of the eight ECHO features of carditis. The cases with an ECHO score > 6 out of 16 were taken as ECHO positive, so as to avoid over diagnosis of valvulitis. Mitral regurgitation, was taken as pathological only when colour mosaic jet persisted throughout systole and the jet was identified in at least two planes. The length of the colour jet was not necessarily > 1 cm in all cases, and were graded further as trivial, grade I, grade II and grade III. Aortic regurgitation and tricuspid regurgitation were also graded as trivial, grade I,

grade II and grade III. Mitral valve thickness was measured for both anterior mitral leaflet and posterior mitral leaflet in parasternal long axis view, with and without tissue harmonics, to find out the difference. Clinical echocardiographic, and laboratory data on the evolution of each episode were collected in specially designed computerized database and was analyzed systematically. Out of 333 suspected cases of ARF, 272 cases, that fulfilled the ECHO criteria for carditis / subclinical valvulitis, formed the material for this study. The 4 cases had various congenital heart disease and the remaining 57 cases were taken as control group.

Results

Out of 333 ECHO positive and Jones' positive were 220 (66.06%) [True +ve], 52 cases (15.61%), where clinically murmur was not heard but ECHO was positive. Though they were Jones' negative, were taken as probably, subclinical carditis presenting late, as biochemical parameters were negative [False - ve]. 4 cases though, clinically were diagnosed as carditis and were +ve by Jones' criteria, actually ECHO showed, one case each of Atrial Septal Defect, myxomatous MVP with mitral regurgitation, aorto arteritis with mitral regurgitation, and subaortic membrane [False positive]. Remaining 57 cases (17.1%) who, were Jones' -ve and clinically as well as echocardiographically negative were taken as control group (True -ve). Sensitivity of Vijay's ECHO criteria is 81% and specificity is 93%.

The various ECHO features observed and their incidence are given below in table II. Out of 239 cases of mitral regurgitation detected by ECHO, only 144 cases had systolic murmur on auscultation. Aortic regurgitation was detected in 60 patients on ECHO, whereas in only 11 cases the early diastolic murmur was heard clinically. In 60 cases, tricuspid regurgitation was detected by ECHO, but systolic murmur of tricuspid regurgitation was heard only in 9 cases.

Increased AML thickness is the commonest feature found in 279 cases (83.8%). The valve thickness (Figure-1) is more often detected (310 cases-93%), if tissue harmonics is used. The PML thickness was found in 188 cases (56.5%), whereas

tissue harmonics increased the yield to 250 cases (75%). Though the AML is thickened more often, the reduced mobility is seen more in PML (121 cases-36%). Reduced mobility of AML is seen less frequently (55 cases-16.5%). Rheumatic nodules or beaded appearance (Figure-2 A,B,C), was seen in 159 cases (47.7%). MVP with thickened valve was seen in 202 patients (83.69%), while TVP was seen in only 42 (12.6%). Out of 5 cases of torn chordae (01.5%), 3 cases had severe mitral regurgitation due to flail valve (0.9%). Though pericardial rub was not heard clinically, pericardial effusion was found in 12 cases (3.6%).

Discussion

More than 50% of RHD detected in surveys and health check up camps are unaware of the disease! More than 70% do not receive secondary prophylaxis (WHO Bulletin 1981) [6] because carditis especially subclinical carditis or valvulitis is mostly missed by the best of the clinicians. Detection of active rheumatic carditis is of great prognostic and therapeutic importance and is currently based on the Jones' criteria[7]. Kaplan EL in the editorial says -Rheumatic fever and rheumatic heart disease continue to be a problem for medical and public health communities- the fact that penicillin has failed to eradicate this disease process is irrefutable proof of the need for more laboratory, epidemiological and clinical research[12]. In fact, it is the lack of penicillin prophylaxis rather than the failure of penicillin . If this large chunk of patients with subclinical carditis could be detected and put on penicillin prophylaxis, one can prevent recrudescence of rheumatic activity and further damage to the valves. Our study clearly shows that a simple non-invasive, reproducible ECHO can fill this grey zone effectively.

Hence, it is essential to realize that precise and early diagnosis of carditis in ARF is very pertinent. The diagnosis of carditis in ARF, traditionally depends on characteristic auscultatory findings like (i) detection of new murmur not present earlier (ii) cardiomegaly (iii) congestive cardiac failure (CCF) (iv) pericardial rub / effusion. This could be unreliable, because if the patient has

come for the first time, how to make out it is a new murmur and it did not exist earlier? Cardiomegaly could be due to any other cause like congenital heart disease, aortoarteritis or dilated cardiomyopathy etc. CCF could be due to any other cause, not necessarily ARF and pericardial rub / effusion could be due to tubercular pericarditis, especially in our country. Hence, clinically there is no way that one could be sure of rheumatic carditis, especially in an era when cardiac auscultation has been taught less extensively and is used with less confidence by young clinicians! In our own experience, a 10 year old boy diagnosed to have ARF with carditis was put on steroids by pediatrician, developed tubercular meningitis due to flaring of primary complex. On ECHO he was found to have a congenital subaortic membrane! Rheumatic carditis is almost always associated with valvulitis. The diagnosis of carditis therefore remains a problem and the solution is obviously not more laboratory tests or the formulation of yet another set of clinical criteria. Because valvulitis constitutes the sine qua non of rheumatic carditis, echocardiographic documentation of valvular and subvalvar changes should, theoretically, be of significant help. Often asked question is 'Does Echocardiography perform better than clinical examination in the detection of carditis?' The answer is 'Yes'. Our study showed that mitral regurgitation was clinically detected in only 144 cases, where as ECHO picked it up in 239 patients. This means that 95 cases would not have received penicillin prophylaxis but for ECHO. Similarly early diastolic murmur of aortic regurgitation was detected clinically only in 11 cases, but ECHO picked up in 60 cases and so also the systolic murmur of tricuspid regurgitation was clinically detected in only 9 cases, but ECHO picked it up in 60 patients. It is not that we are over diagnosing the physiological regurgitation. Because according to Vijay's ECHO criteria, unless we have three or more parameters like thickened valve / beaded appearance / reduced mobility / increased echogenicity of sub mitral structures etc we do not take regurgitation as rheumatic. For example one patient with grade II mitral regurgitation was

clinically diagnosed as carditis, did not fulfill the criteria as other features were not there. That case turned out to be aortoarteritis. Similarly, another clinically diagnosed case of carditis with MVP and grade II mitral regurgitation had myxomatous redundant valve with grade III MVP, the ECHO score was 4 (Figure - III). Yet another case though clinically diagnosed as carditis with MR had atrial septal defect with MVP, there was mitral regurgitation by ECHO. The ECHO not only helps to make precise diagnosis but also helps in management strategy when severe MR is due to chordal tear (Figure-IV).

Cotrim [11], conclude that early ECHO is very important in all children suspected to have ARF, especially, because mitral regurgitation can be demonstrated by colour flow mapping in absence of cardiac murmur (Figure V). Neutze et al[12], feel pulse and colour Doppler ECHO provide a method to detect minor degree of pathological regurgitation without characteristic clinical signs. Doppler echocardiography is more sensitive than clinical assessment in the detection of carditis in acute rheumatic fever, and can contribute to earlier diagnosis [16]. In fact addition of ECHO features in the criteria for diagnosis, not only prevents over diagnosis of carditis by clinicians but also helps in detecting the subclinical cases of carditis / valvulitis that would otherwise go undetected and would not receive secondary prophylaxis, due to absence of Jones' criteria. As in our study, 108 cases had subclinical carditis detected on ECHO by the ECHO criteria out of which 56 were Jones's +ve and 52 cases were Jones's negative. Probably these large groups of patients are the ones who present later as RHD, without the past history of ARF and secondary prophylaxis. The cost of ECHO at the beginning of the disease and the cost of penicillin prophylaxis is negligible, when compared to the human suffering and cost of management of RHD with or without surgery.

Vijay's ECHO criteria plays an important role in early, precise diagnosis of carditis / subclinical valvulitis. The sensitivity of this criteria is 81% and specificity is 93%. Therefore, apart

from valvular regurgitations, other features of rheumatic carditis in ECHO and colour Doppler findings should be accepted as a major criterion for the diagnosis of rheumatic fever. Therefore, there is no doubt that if echocardiography is used as a primary diagnostic modality and is included in Jones' criteria it will change the epidemiological face of ARF and RHD completely. However, long-term follow-up is necessary to determine the outcome for young children with subclinical echocardiographic evidence of valvular disease[17].

Conclusions

Early and precise diagnosis of carditis in ARF, though difficult is very important to prevent the serious consequences, morbidity and mortality in young. Vijay's ECHO criteria plays an important role in precise diagnosis of carditis / subclinical valvulitis. These subclinical changes detected only by ECHO, can persist and probably belong to a large group of patients who present later as RHD, without the past history of ARF and prophylaxis. Therefore ECHO should be included as a major criterion in Jones' criteria

Table-I Vijay's Echo Criteria

Sl.No	Echo feature	Score
1	MV and AV thickness \geq 4mm	2
2	Increased Echogenicity of Submitral structures	2
3	Rheumatic nodules (beaded appearance)	2
4	Mitral valve prolapse (MVP)/AVP/TVP	2
5	MV regurgitation and / AVR/TVR	2
6	Reduced mobility of valves	2
7	Chordal tear	2
8	Pericardial Effusion	2
	Total Score	16

Score >6 is Diagnostic of Rheumatic Carditis

Table-II Showing type o cardiac involvement by ECHO

Sl. No.	Type of Involvement	No. of Cases	%
1a.	Mitral valve thickness \geq 4 mm	279	83.8%
	anterior mitral leaflet (AML)	188	56.5%
1b.	Mitral valve thickness by tissue harmonics	310	93.0%
	Anterior mitral leaflet (AML)	250	75.0%
2.	Posterior mitral leaflet (PML)	230	75.0%
	Increased echogenicity of submitral structures	230	75.0%
3.	Reduced mobility	55	16.5%
	Anterior mitral leaflet (AML)	121	36.3%
4.	Posterior mitral leaflet (PML)	202	83.69%
	Mitral valve prolapse (MVP)	3	00.9%
5.	Flail valve	42	12.6%
	TVP	159	47.7%
6a.	Rheumatic nodules (Beaded appearance)	72	21.6%
	Mitral regurgitation	48	17.6%
6b.	Grade trivial	56	16.8%
	Grade I	63	18.9%
6c.	Grade II	11	03.3%
	Grade III	23	06.9%
7.	Aortic regurgitation (AR)	13	03.9%
	Grade trivial	13	03.9%
8.	Grade I	18	05.4%
	Grade II	31	09.3%
9.	Tricuspid regurgitation (TR)	11	03.3%
	Grade trivial	12	03.6%
10.	Pericardial effusion (PE)	5	01.5%

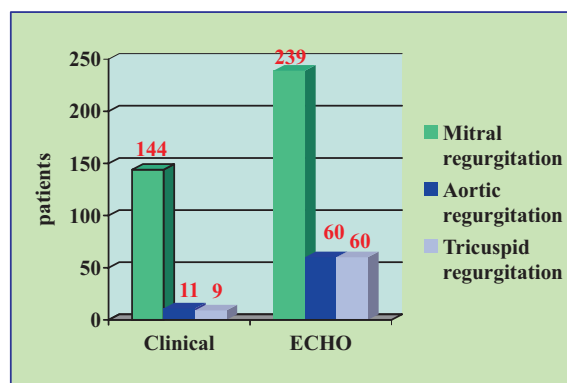


Table III – Clinical and ECHO correlation in mitral, aortic and tricuspid regurgitation

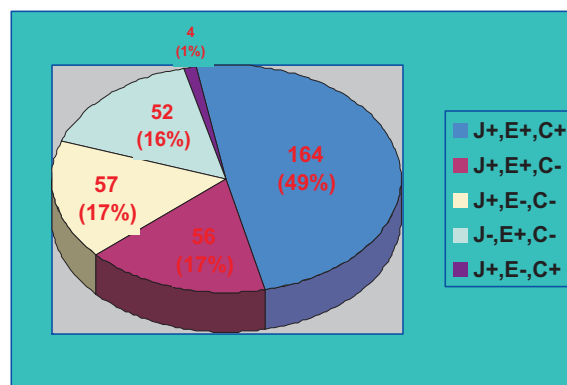


Table IV J= Jones criteria, E = Echo criteria, C= Clinical criteria

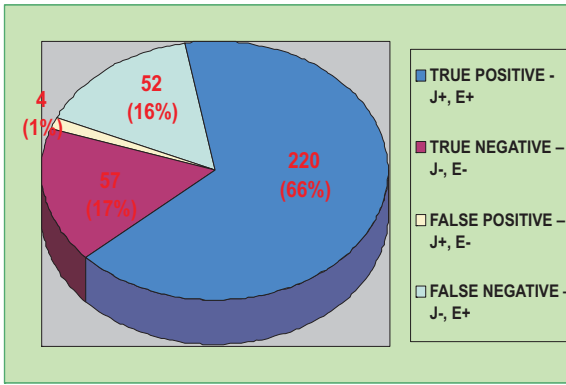


Table V

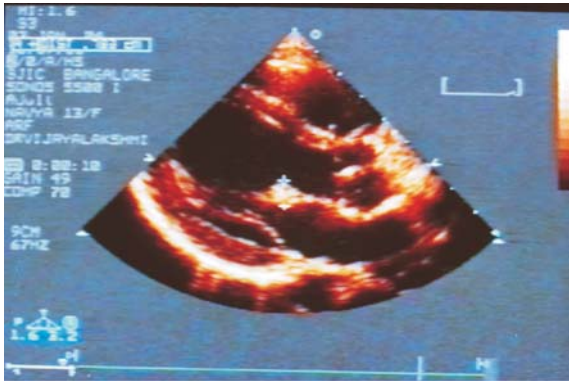


Figure I- ECHO in PLAX view shows thickened AML (6mm)

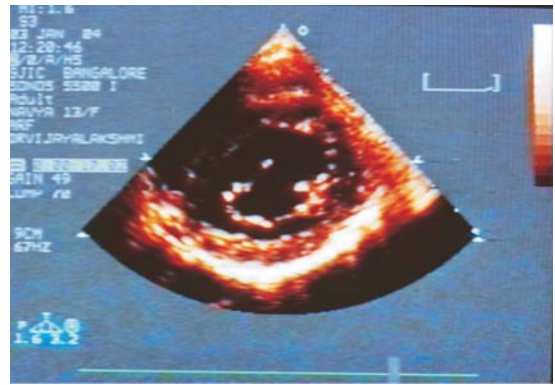


Figure II C -Short axis view shows beaded appearance of mitral valve

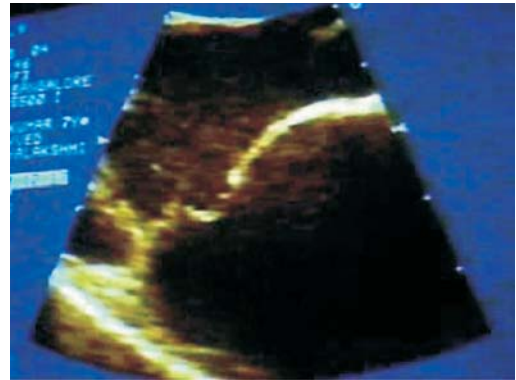


Figure III- 12 years old boy with Mitral regurgitation. ECHO-Grade III MVP with Myxomatous redundant valve with MR. The ECHO Score - 4 (MVP-2, MR-2)



Figure II Mitral valvar verrucous nodules as seen (a) at autopsy, and compared (b) to an echocardiogram showing nodules on the mitral leaflets

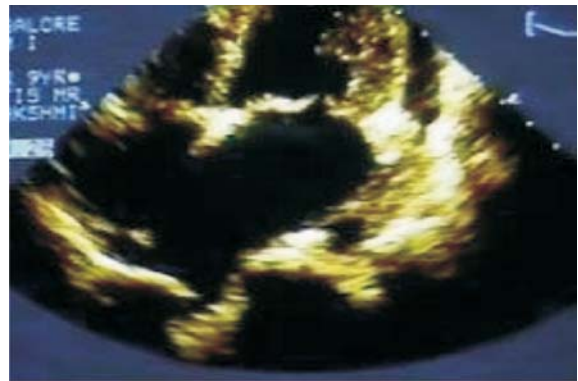


Figure IV- 10 years old girl with Mitral regurgitation. Apical four chamber view shows MVP, PE, MR with chordal tear ECHO Score-10 (MVP-2,MR-2, MV thick-2, PE-2 Chordal tear-2).



Figure V - Pancarditis with mitral regurgitation.

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A Study of Cytological Abnormalities of Pap Smear and its Risk Factors Among Married Women of Reproductive Age in Urban Area - Bagalkot.

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Abstract

Introduction: Cervical cancer is both a preventable and a curable disease, preventable because the pre-invasive stage can be detected by screening and curable because the verily early stage can be cured. The incidence and mortality from this disease in developing countries is very high. Women of low socio-economic status and minority women are at particular risk for not adhering to recommended cancer screening guidelines.

Objectives: 1. To study the cytological abnormalities of pap smear among married women in reproductive age group.
2. To study the risk factors of various stages of cervical dysplasia.

Material and Methods: This study was conducted in the urban field practice area of S Nijalingappa Medical College, Bagalkot during 2009-2010. All married women in reproductive age group were included in the study. After obtaining a informed consent, they were interviewed with the predesigned, pre-structured proforma. Data were obtained on social and demographic factors, education, marital and reproductive history and tobacco chewing was obtained. Under aseptic precautions, pap smear was obtained.

Results: In the present study, 211 married women participated, among them maximum (45%) were in the age group of 26-35 years. The pap smear report of these participants were inflammatory (57.8%). Severe dysplasia was reported in 9 women. Among the study participants, 66(31.3%) of the women had normal pap smear. Inflammatory smear was present more among 26-35 year age group (30.8%), Class II socio economic status (32.7%) and among Hindus(54.1%). Severe dysplasia was maximum reported among 46-55 years age group, class II socioeconomic status and among Hindus.

Recommendation and conclusion: Cervical cancer is a problem with multiple causes and a multipronged approach is essential to combat it. It is essential to provide health education for women, particularly those from the lower socioeconomic strata regarding sexual and genital hygiene and appropriate treatment of sexually transmitted infection.

Key words: Pap smear, cervical dysplasia, married women, reproductive age

Introduction

Invasive cervical cancer is considered as a preventable cancer due to long period before invasion, efficacy of screening programmes and proper therapy of primary lesions[1]. The risk factors for invasive cervical cancer include early age at the time of first sexual intercourse, multiple sexual partners, low socioeconomic status and a history of sexually transmitted diseases[2]. Carcinoma of the cervix is the commonest genital

malignancy afflicting women in the developing world. An estimated 1,90,000 women die each year as a result of cervical cancer, with 80% of these deaths occurring in the developing world[3]. High costs of therapy, lack of awareness and absence of adequate health infrastructure have prevented the most low-resource countries from instituting population-wide pap smear screening programmes. Only 5% of women in developing countries undergo cervical cancer screening compared with

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40-50% in the developed world [4]. In India, annually 16% of the world's total cases occur and only 5% are reported in the early stages[5].

The rigorous decision and analytic approach using computer based modeling methods enables linkage of the knowledge gained from empirical studies to real world situations [6]. The incidence of precancerous lesions identified by the pap test is highest among reproductive age group women[7]. In United states, most organizations recommend annual pap tests once a women has become sexually active, with some recommending less frequent screening following three normal test results [8]. WHO has recommended its member countries to develop and integrate cervical cancer screening into their health systems depending on the local, social, cultural and economic contexts [9]. This will ensure a defined referral system for diagnosis, treatment and follow-up.

Pap smear is a cost effective and a useful test for identifying those at risk of developing a cervical cancer and it holds the potential to be used as a tool to identifying women at risk for subsequent development of cervical cancer. There is an imperative need for continued efforts to ensure that medically underserved minority women to have cancer screening services. Hence this study was undertaken to study the various risk factors for cervical precancerous and cancerous lesions and pap smear examination for all the participants in the urban field practice area of S Nijalingappa Medical College, Bagalkot.

Material and Methods

This study was conducted in the urban field practice area of S Nijalingappa Medical College, Bagalkot during 2009-2010. The institutional ethical clearance was obtained.

All married women in reproductive age group were included in the study. After obtaining an informed consent, they were interviewed with the predesigned, pre-structured proforma. Data were obtained on social and demographic factors, education, marital, reproductive history and tobacco chewing was obtained.

Under aseptic precautions, pap smear was obtained. A specimen from the cervix was obtained

from each participant using the Ayre's spatula. The specimen was smeared on a slide and fixed using cytofix according to the conventional standard cytological screening procedure. Specimens were examined in the department of pathology. The 1988 Bethesda II classification was used for reporting the pap smear results.

The data was tabulated and analysed using Microsoft excel and OPEN EPI software.

Results

In the present study, 211 married women participated, among them maximum (45%) were in the age group of 26-35 years (Table I).

The pap smear report of these participants were inflammatory (57.8%). Severe dysplasia was reported for 9 women (Table II).

Among the study participants, 66(31.3%) of the women had normal pap smear. Inflammatory smear was present more among 26-35 years age group (30.8%), Class II socio economic

Table I
Showing age distribution of study subjects

Age(years)	Number	Percentage
15-25	19	9
26-35	95	45
36-45	52	24.6
46-55	31	14.7
56-65	14	6.7
Total	211	100

status (SES) (32.7%) and among Hindus(54.1%), which is found to be statistically highly significant($p < 0.0001$).

Table II
Showing pap smear report of the study subjects

Report	Number	Percentage
Normal	66	31.3
Inflammatory	122	57.8
Mild dysplasia	3	1.4
Moderate dysplasia	11	5.2
Severe dysplasia	9	4.3
Total	211	100

Severe dysplasia was reported maximum among 46-55 years age group, class II socioeconomic status and among Hindus (Table III).

Cervical dysplasia of various stages was

seen maximum among women who have attained menarche at the age of 12-14 years. Age at marriage was taken as proxy for age at first intercourse. It was noticed that earlier the age at marriage, they were at increased risk of developing dysplasia. Infertility was found to be protective against cervical dysplasia among the study participants. Multiparous and grand multiparous women were at more risk of developing cervical dysplasia of various degree, when compared to primi and nulliparous women (Table IV), though it was not statistically significant.

Discussion

In the present study, 211 married women participated, among them 66(31.3%) had normal smear, 122 (57.8%) had inflammatory smear, 3(1.4%) had mild dysplasia, 11(5.2%) had moderate dysplasia and 9(4.3%) had severe dysplasia. None of them had proved malignancy in the cervical cytology.

Chankapa YD et al, in the study conducted in East Sikkim conducted for underserved women noted that 53.2% of the participants had inflammatory smear, which is similar to our study where 60% of the participants were in the age group of 15-35years[12]. Another study conducted in the general practice setting by Kelly et al noted the various causes for inflammatory cervical smears[13] and they found that the infection with Chlamydia trachomatis, Trichomoniasis, Human papiloma virus (HPV) infection as the etiological factors for the occurrence of inflammatory cervical smear. In the present study that inflammatory smear was more common among those who are married at the earlier age compared to older age, similar to the study conducted in East Sikkim[12]. It was also noted in our study, the inflammatory smear was more prevalent among class II and III according to Modified Kuppaswamy's classification, in contrast to the study conducted by Chankapa YD et al. This could be due to the less representation of women from the lower SES class in our study.

Cervical cancer can be detected at an early stage through regular advantage of screening. A qualitative descriptive study was conducted with female members of a urban sikh community in Canada to explore perspectives on cervical cancer screening. Lack of knowledge about the importance of prevention, influence of family and

community and health provider issues affected the women's access to screening[10]. The effectiveness of cervical cancer screening programs differs widely in different populations. A nation wide audit of the effectiveness of the Swedish cervical cancer screening programme depicted that the screening program was equally effective for women of all ages and was also effective against non-squamous cancers[11].

In our study 11% of the study participants had dysplasia of various degree, among them 5.2% had moderate dysplasia followed by 4.3% who had severe dysplasia. In the study conducted in Kerala, 17% of them had mild dysplasia, 0.3% of them had moderate dysplasia and 0.8% of them had severe dysplasia[14]. In our study moderate to severe dysplasia was seen maximum among 36-55 years age group, similar to the study conducted in Kerala [14].

In the present study, early age at marriage and first pregnancy was associated with increased occurrence of moderate to severe dysplasia, which is similar to study conducted in East Sikkim [12].

Cervical cancer is both a preventable and a curable disease, preventable because the pre-invasive stage can be detected by screening and curable because the very early stage can be cured. Women of low socioeconomic status are at particular risk for not adhering to recommended cancer screening guidelines[15]. Hence cervical cancer is a problem with multiple causes and a multipronged approach is essential to combat it. It is essential to provide health education for women, particularly those from the lower socioeconomic strata regarding sexual and genital hygiene and appropriate treatment of sexually transmitted infections.

Table III Showing relationship of socio-demographic factors with various stages of cervical dysplasia.

Factors	Normal	Inflammatory	Mild dysplasia	Moderate dysplasia	Severe dysplasia	Chi square	p
Age in years							
15-25	6	12	0	0	1	55.57	0.0001
26-35	26	65	2	1	1		
36-45	17	32	1	1	1		
46-55	9	12	0	5	5		
56-65	8	1	0	4	1		
Socioeconomic status						17.77	0.123
I	17	30	1	4	4		
II	25	69	2	5	5		
III	21	23	0	2	0		
IV	3	0	0	0	0		
Religion						40.64	0.0001
Hindus	63	114	2	9	6		
Muslims	2	4	0	0	3		
Jains	0	2	0	1	0		
Christian	1	2	1	1	0		
Total	66	122	3	11	9		

Table IV Showing reproductive variables and various stages of cervical dysplasia.

Factors	Normal	Inflammatory	Mild dysplasia	Moderate dysplasia	Severe dysplasia	Chi square	p
Age at Menarche							
≤12	2	10	0	2	1	7.4	0.49
13-15	56	96	3	9	8		
≥16	8	16	0	0	0		
Age at Marriage						17.13	0.14
≤15	2	6	0	1	0		
16-18	38	42	0	4	2		
19-21	14	52	2	4	4		
≥22	12	22	1	2	3		
Age at first pregnancy						19.45	0.72
Infertile							
Infertile	2	6	0	0	0		
≤15	0	1	0	0	0		
16-18	23	25	0	4	1		
19-21	16	34	0	1	3		
22-24	15	38	2	4	2		
25-27	7	10	0	2	1		
≥28	3	8	1	0	1		
Parity						12.63	0.39
Nullipara	3	6	0	0	0		
Primi	11	21	0	0	0		
Multipara	40	75	2	6	5		
Grandmulti para	12	20	1	5	4		
Total	66	122	3	11	9		

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Pre-emptive Epidural Analgesia with Bupivacaine, Diltiazem and Ketamine Singly or In Combination- A Randomised Trial.

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Abstract

Background: A randomized control study was designed to compare postoperative epidural analgesia by preemptive use of epidural administration of local anesthetic- bupivacaine alone and in combination with NMDA blocker- ketamine or calcium channel blocker- diltiazem singly or both in combination.

Methods: Sixty female patients in age group 35-50 yrs with ASA grade I and II, posted for open abdominal hysterectomy were randomly distributed in four groups after ethical committee approval and written consent. They were given epidurally 0.4 ml/kg of 0.5 % Bupivacaine in Control group, 0.4 ml/kg of 0.5 % Bupivacaine + Ketamine 5mg in BK group, 0.4 ml/kg of 0.5 % Bupivacaine + Diltiazem 10 mg in BD group and 0.4 ml/kg of 0.5 % Bupivacaine + Ketamine 5 mg + Diltiazem 10 mg in BKD group.

Results: BK group had significant pain free period (8.8 ± 1.37) post operatively as compared to rest three groups ($P < 0.01$). BD group (5.8 ± 0.94) also had comparable pain relief. BK group needed three to four number of top-up's in first 24 hours (3.37 ± 0.46) where as BD group needed five to seven number of top-up's in next 24 hours (5.93 ± 0.70) ($P < 0.01$). BK group and BKD group patients were sedated resulting in reduced number of top-ups required in first 24 hours.

Conclusion: Ketamine and diltiazem were found to be synergetic with bupivacaine for preemptive epidural analgesia. Diltiazem was better option over ketamine when sedation is not desirable.

Key-Words: Pre-Emptive Analgesia, Epidural, Ketamine, Diltiazem.

Introduction

An important goal of modern anaesthesia is to ensure that the patient undergoing surgery awakens from anaesthesia totally pain free and that this state is maintained satisfactorily in the post-operative period as well. Good pain control not only speeds up the recovery of patients but also shortens their length of hospital stay. Pre-emptive analgesia is an attractive concept of addressing pain even before it starts.

There is substantial amount of evidence that N-methyl-D-aspartate (NMDA) receptor is important in sustaining and magnifying excitability of neurons in the spinal cord.[1] Excitatory

neurotransmitters, acting through N-Methyl-D aspartate (NMDA) receptors have been related to the development and maintenance of pathological pain states after tissue injury especially hyperalgesia and allodynia.

Calcium channel conductance at neuronal level is essential for neurotransmitter effectivity and for nociceptive perception. A disruption of calcium ion movement interferes with sensory processing and contributes to antinociception [1, 2, 3].

These observations have encouraged the evaluation of NMDA receptor antagonists [4], and calcium channel blockers[5], in different pain

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states. Studies using epidural ketamine with bupivacaine for preemptive analgesia are limited and to our knowledge limited studies have used epidural diltiazem prompting us to design this study. This study was taken up postulating addition of NMDA antagonist ketamine and/or calcium channel blocker- diltiazem to epidural bupivacaine would improve analgesic quality as well as reduce postoperative analgesic consumption.

Material and Methods

A prospective randomized control study was designed to compare postoperative analgesia by preemptive use of epidural administration of local anesthetic-bupivacaine alone or in combination with NMDA blocker- ketamine or calcium channel blocker- diltiazem singly or both in combination. After obtaining the approval from the Institutional ethics committee the present study was undertaken in 60 female patients.

Inclusion Criteria: Patients aged between 35-45 years in ASA grade I and II posted for abdominal hysterectomy.

Exclusion Criteria: Patients with H/O chronic backache, coagulopathy, local sepsis, spinal deformities, cardiovascular problems and those patients using the study drugs pre-operatively were excluded.

After valid informed consent, the selected patients were randomly allocated by block randomization method to four groups of 15 patients each and group 1 acted as the Control group.

Block size :4 Allocation Ratio: 1:1:1:1. For allocation concealment, randomization was done by third person other than the Anaesthesiologist who administered the drugs and later on made the observations. All the patients were explained the use of visual analogue scale and Prince Henry Scale preoperatively. Drugs administered epidurally 30 minutes before induction of general anaesthesia for preemptive analgesia are shown:

Group 1 (Control group): 0.4 ml /kg of 0.5 % Bupivacaine.

Group 2 (BK group) : 0.4 ml /kg of 0.5 % Bupivacaine + Ketamine 5mg.

Group 3 (BD group): 0.4 ml /kg of 0.5 % Bupivacaine + Diltiazem 10 mg.

Group 4 (BKD group): 0.4 ml /kg of 0.5 % Bupivacaine + Ketamine 5 mg + Diltiazem 10 mg.

Both the patient and the anesthesiologist were blinded to the study solutions. Syringes were prepared by the third person who did randomized allocation, immediately before the epidural injection, ensuring total volume of 20ml and labeled as "Epidural Study Drug" and the patient's name. Anticholinergic, benzodiazepines and opioid premedication was avoided to prevent interference with intraoperative and postoperative assessment. All the baseline parameters were recorded. After fulfilling all the pre-requisites of regional anaesthesia, under all aseptic precautions in sitting position, epidural space was identified using a midline approach at L3-4 inter space with 18 G Tuohys epidural needle by loss of resistance to air technique. An 18 G epidural catheter was inserted in cephaloid direction gently to an intraepidural distance of 3-4 cm in all the patients. Patients were then put in supine position and a test dose of 3 ml of 2 % lignocaine with adrenaline (1:2,00,000) was given. All the patients were given respective study drugs 30 minutes prior to induction of general anaesthesia. The extent of sensory blockade was assessed by pinprick method and after desired sensory blockade ($T6 \pm 1$) was achieved, conventional general anaesthesia was administered. Induction was done with inj. thiopentone sodium 4 mg/kg followed by intubation facilitated by inj. Vecuronium 0.1mg/kg. Anaesthesia was maintained with O₂, N₂O and halothane. Neuromuscular block was reversed at the end of surgery by inj. neostigmine 0.05 mg/kg and inj. glycopyrrolate 0.01mg/kg. Intraoperatively systemic analgesics were avoided in all groups. Routine monitoring was done throughout the intraoperative period with special attention for signs of inadequate analgesia such as tachycardia, hypertension and excessive lacrimation. Haemodynamic parameters (SBP, DBP and PR) were recorded both before and after the incision and later at frequent intervals. Postoperatively all the patients received analgesia through epidural catheter with fixed dose of 20 ml of 0.2 % of local

anaesthetic- bupivacaine as and when required in first 48 hrs using pain score. All patients were monitored for haemodynamic status in the postoperative period. Pain was assessed using the Prince Henry Score, Visual analogue scale and sedation score every 4 hours till 48 hours postoperatively.

Prince Henry Score: It is graded as

- 0- when patient has no pain on taking a deep breath or on coughing.
- 1- when patient had no pain at rest nor on taking a deep breath but had pain coughing.
- 2- when patient had no pain at rest but pain on taking a deep breath.
- 3- when patient had mild pain at rest.
- 4- when patient had severe pain at rest.

Visual Analogue Scale:

It consists of a scale marked from 0 to 100 mm where 0 indicates no pain and 100 indicates worst pain.

Sedation Score: It is graded as

- 0 - Awake patient.
- 1 - Drowsy patient.
- 2 - When patient is sleeping but responds to verbal Commands.
- 3 - Sleeping but responding to tactile stimulus.
- 4 - Unresponsive patient.

When the visual analogue score was 20 or the Prince Henry score was 2 on assessment, the analgesic drug was given epidurally even if the patient did not ask for it. Epidural catheter was removed post operatively after 48 hours. Efficacy of different drug combinations as regards post operative pain relief indicated by duration of analgesia i.e: 1st top-up requirement and total analgesic requirement in first and next 24 hours period i.e: number of top-ups required in the first and next 24 hours was noted and compared in all groups. Patients satisfaction was assessed by questioning patients at the end of 48 hours about pain relief, postoperative sedation, comparison of pain relief with previous experience if any.

Data analysis

Descriptive statistics for all the continuous variables was expressed in terms of mean and standard deviation. Differences in group mean of

baseline subject characteristics (age in years and weight in kgs.) were tested using ANOVA F-test for continuous variables. Mean duration of analgesia and mean no. of top-ups required in first 24 hours and next 24 hours for each group was compared using simple linear regression. Hemodynamic parameters (systolic blood pressure, diastolic blood pressure and pulse rate) were measured at baseline, pre-incision and post-incision and the difference in the mean at these three time points was tested using linear regression with generalized estimating equations to take care of clustering of the observations at individual patient level. Comparison of mean hemodynamic parameters at different time points was done separately for each group. The level of significance was set at 0.05. The statistical analysis was done using STATA 11 IC.

Results

Our study included 60 patients divided into 4 groups belonging to ASA Grade I and II who were posted for elective abdominal hysterectomy. Range of age was 35 to 45 years and weight was 42 to 58 kgs in all groups. Table I shows baseline, pre-incision and post-incision haemodynamic parameters. In all groups, pre-incision haemodynamic parameters were lower than the baseline and post-incision parameters were lower than the pre-incision, suggesting adequate analgesic effect. The first analgesic requirement in the post-operative period was compared in all 4 groups. BK group had significant pain free period (8.8 ± 1.37 hrs.) post operatively as compared to the rest three groups ($P < 0.05$) BD group (5.8 ± 0.94 hrs.) also had comparable pain relief. Though BKD group (7.53 ± 1.14) did not offer any advantage over BK group it is better than BD group. BK group needed least number of top-up's in first 24 hours (3.37 ± 0.46) where as BD group needed least number of top-up's in next 24 hours (5.93 ± 0.70). The total number of top-up's required for BK group in the first 24 hours were doubled in the next 24 hours which was correlated with decreasing sedation. Control group received the maximum amount of drug in 48 hours (395.73 ± 20.81 mg) while BK group received the minimum amount of drug in 48 hours (281.87 ± 30.79 mg) (Table II).

The sedation scores taken at the end of every 4 hours showed that in BK group and BKD group patients were sedated. BK group patients were sedated upto grade 2 in initial 24 hours which correlated with the reduced number of top-ups required in first 24 hours. No side effects were noted in any of the above groups. When patients were assessed for satisfaction, BK group patients were most satisfied followed by BD group (Table III).

Discussion

Nociceptive stimulation causes neurotransmitter release, which is coupled with activation of voltage-dependent calcium conductance in synaptic terminal membranes of neurons. A disruption of calcium influx into the cells interferes with normal sensory processing and contributes to antinociception.

Peripheral tissue injury provokes both peripheral and central sensitization. Peripheral sensitization is a reduction in the threshold of nociceptor-afferent peripheral terminals and central sensitization is an activity dependent increase in the excitability of spinal neurons [6]. There is considerable evidence that excitatory amino acids and neuropeptides are involved in nociceptive transmission in the dorsal horn of the spinal cord [7, 8]. The actions of excitatory amino acids are mediated by the N-methyl-n-aspartate (NMDA) receptor and non-NMDA receptors. Activation of NMDA receptors leads to Ca^{++} entry into the cell and initiates a series of central sensitization such as wind-up and long-term potentiation in the spinal cord in the responses of cells to prolonged stimuli. This central sensitization may be prevented by preemptive analgesia not only with NMDA antagonists such as ketamine, but also with calcium channel blockers that block Ca^{++} entry into cells.

Recently increasing attention has been focused on new methods of pain relief to improve patient care. Good pain control can speed up the recovery of patients and shorten their hospital stay. Evidence from the basic research in the mechanism of pain suggests that administration of analgesic drugs much before surgical stimulus may be more

effective than giving them after the stimulus. This is referred to as "PRE-EMPTIVE ANALGESIA" and is one of the new treatment protocols. The accepted method for postoperative analgesia till now was to begin the analgesic treatment when the pain starts in the post-operative period. Pre-emptive analgesia is an attractive concept of addressing pain even before it starts.

We planned this study to compare postoperative epidural analgesia after open abdominal hystrectomy by preemptive use of epidural administration of bupivacaine alone or in combination with ketamine or diltiazem singly or both in combination. Opioids were avoided because they could have prevented or attenuated central sensitization, thus leading to questionable results [9,12]. A sub-anesthetic ketamine dose, defined as intravenous or epidural bolus below 1 mg.kg^{-1} is related to analgesic effects, as compared to a higher dose which has psychomimetic symptoms and dissociative anaesthesia [13]. At subanesthetic (i.e. low) doses, ketamine exerts a specific NMDA blockade and hence modulates central sensitization induced both by the incision and tissue damage and by perioperative analgesics such as opioids[14]. We used very low dose of ketamine (5mg) along with bupivacaine. No studies have evaluated the effects of epidural bupivacaine and verapamil before Choe H. et al [15], who administered lumbar epidural bupivacaine or bupivacaine plus verapamil to investigate the possible role of the calcium channel blocker, verapamil, in postoperative pain. Later on Lin XM [16], also used epidural Bupivacaine + Verapamil. We decided to test diltiazem by epidural route along with bupivacaine and compare it with ketamine and bupivacaine. Analgesia was adequate in all the groups during intraoperative period as pulse rate and blood pressure remained stable. Both ketamine and diltiazem proved to be an effective adjuvant to plain bupivacaine for epidural analgesia as control group showed the shortest duration of postoperative pain free period ($4.6 \pm 0.74 \text{ hrs.}$) and required maximum number of top-ups in first (6.0 ± 0.85) and next 24 hours (8.13 ± 0.83). Ketamine proved to be better than diltiazem

as BK group showed the longest duration of postoperative pain free period (8.8 ± 1.37 hrs.) and required minimum number of top-ups in first 24 hours (3.37 ± 0.46). Sedation was also noted during this period (Sedation score more than 2 in 9 patients and 1 in 6 patients) which would have contributed for the pain relief as the requirement of top-ups increased in next 24 hours (6.8 ± 0.77). As against this, number of top-up's in BD group did not vary much in the study period of 48 hours. (4.93 ± 0.80 and 5.93 ± 0.70 respectively), showing well balanced level of analgesia without associated sedation. Duration of postoperative pain free period was less (5.8 ± 0.94 : 8.8 ± 1.37) and total consumption of bupivacaine was more (304.27 ± 37.96 : 281.87 ± 30.79) in BD group as compared to BK group. Nevertheless as sedation was not noted in this group, (sedation score 0 in 93.33% patients) diltiazem can be a better option over ketamine in whom sedation is not desirable. Combining ketamine and diltiazem with bupivacaine did not offer much advantage. Contrary to our results

Kawana Y et al [17], who also administered low doses ketamine (4, 6, 8 mg) found that ketamine administered epidurally was inadequate for postoperative pain relief after gynecologic operations. This may be due to the fact they administered ketamine singly while we administered it along with bupivacaine. Choe H. et al [15] and Lin XM [16] also had similar results like us regarding use of calcium channel blocker though they used verapamil and we used diltiazem.

In conclusion both NMDA antagonist ketamine and calcium channel blocker diltiazem were found to be synergistic with local anesthetic bupivacaine when used for preemptive epidural analgesia and provided excellent intraoperative and postoperative analgesia in patients who had undergone abdominal hysterectomy. Diltiazem was found to be a better option than ketamine when sedation is not desirable in postoperative period. A detailed study in larger number of patients is recommended for full exploitation of analgesic effects of diltiazem.

Table I : Comparison of Haemodynamic Parameters

Haemodynamic Parameters		Control Group (n=15)	BK Group (n=15)	BD Group (n=15)	BKD Group (n=15)
		Mean \pm SD	Mean \pm SD	Mean \pm SD	Mean \pm SD
Baseline	SBP(mm of Hg)	123.43 \pm 8.65	121.65 \pm 6.25	128.93 \pm 6.44	119.06 \pm 6.57
	DBP(mm of Hg)	80.8 \pm 5.10	81.2 \pm 3.78	79.86 \pm 8.46	77.73 \pm 4.95
	PR/min	78.4 \pm 5.52	81.2 \pm 3.49	80.6 \pm 5.78	81.0 \pm 5.90
Pre-Incision	SBP(mm of Hg)	117.06 \pm 8.09**	120 \pm 7.41	114.26 \pm 7.62**	115.33 \pm 6.56**
	DBP(mm of Hg)	76.53 \pm 4.70**	78.4 \pm 3.57**	74.8 \pm 7.86**	76.26 \pm 5.65
	PR/min	77.6 \pm 5.9	80.46 \pm 3.75††	78.33 \pm 6.27	80.66 \pm 5.73
Post-Incision	SBP(mm of Hg)	113.6 \pm 6.16**	118.1 \pm 7.74**	112.8 \pm 6.76**	114.3 \pm 5.4**
	DBP(mm of Hg)	74.93 \pm 4.12**	76.93 \pm 4.06**	74.4 \pm 5.8**	75.73 \pm 5.6
	PR/min	76.4 \pm 6.07*	82.27 \pm 4.25¶	79.33 \pm 5.15	79.33 \pm 4.82

BK Group = Bupivacaine + Ketamine group

BD Group = Bupivacaine + Diltiazem group

BKD Group = Bupivacaine + Ketamine + Diltiazem group

SBP = Systolic Blood Pressure

DBP = Diastolic Blood Pressure

PR = Pulse Rate

* P-value significant at 0.05 ** p-value significant at 0.01 (When Baseline SBP, DBP and PR are compared to pre incision and post incision SBP, DBP and PR respectively)

¶ P-value significant at 0.05 †† p-value significant at 0.01 (When SBP, DBP and PR are compared in all groups)

Table II : Comparison of duration of analgesia and number of top-ups required in first and next 24 hours.

	Control Group (n=15)	BK Group (n=15)	BD Group (n=15)	BKD Group (n=15)
	Mean \pm SD (range)	Mean \pm SD (range)	Mean \pm SD (range)	Mean \pm SD (range)
First top-up requirement (Mean duration in hours)	4.6 \pm 0.74 (3.5 - 6)	8.8 \pm 1.37** (6 - 12)	5.8 \pm 0.94 ** (4 - 8)	7.53 \pm 1.14** (6 - 10)
No of top-ups in first 24 hours	6.0 \pm 0.85 (5 - 8)	3.37 \pm 0.46** (3 - 4)	4.93 \pm 0.80** (4 - 6)	5.36 \pm 0.80** (4 - 7)
No of top-ups in next 24 hours	8.13 \pm 0.83 (7 - 10)	6.8 \pm 0.77** (6 - 8)	5.93 \pm 0.70** (5 - 7)	7.53 \pm 1.13 (6 - 9)
Total dose of bupivacaine required in postoperative period in mg	395.73 \pm 20.81 (364 - 420)	281.87 \pm 30.79 (252 - 336)	304.27 \pm 37.96 (252 - 364)	358.4 \pm 35.42 (308 - 420)

BK Group= Bupivacaine + Ketamine group

BD Group= Bupivacaine + Diltiazem group

BKD Group= Bupivacaine + Ketamine + Diltiazem group

* P-value significant at 0.05

** p-value significant at 0.01

Table III :Number of patients showing sedation score in first and next 24 hours.

Sedation score in first 24 hours	Control Group (n=15)	BK Group (n=15)	BD Group (n=15)	BKD Group (n=15)
0	15	0	14	0
1	0	6	1	12
2	0	7	0	2
3	0	2	0	1
4	0	0	0	0
Sedation score in next 24 hours				
0	15	12	15	13
1	0	3	0	2
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

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A Profile of Tobacco Consumption Among Females Female more than 15 Years of age In Rural Field Practice Area of RHTC. Kaladagi.

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Abstract

Introduction: In India it has been estimated that roughly one-third of women and two thirds of men use tobacco in any form (smoke or smokeless form). Awareness of the hazards of smokeless tobacco consumption is very low in rural populations. On the other hand, many believe that tobacco use has medicinal value for curing or palliating common ailments such as toothache, headache, and abdominal pain.

Aim and objectives:

1. To know the prevalence of smokeless tobacco consumption among females of more than 15 years of age
2. To study the factors responsible for smokeless tobacco consumption among them.

Material and methods:

Study design: A cross sectional study.

Study setting: Rural Health Training Centre (RHTC) Kaladagi, Bagalkot.

Study participants: Women more than 15 years of age in slum area of RHTC Kaladagi.(255)

Statistical analysis: Chi square test.

Results: In present study 17.6% of women were chewing tobacco. 88.89% of women were chewing tobacco because of toothache. There is association between tooth ache and tobacco consumption and it is statistically highly significant also. Chi-square value=190.8 (P<0.000001)

Key words: smokeless tobacco, females, rural slum.

Introduction

In India it has been estimated that roughly one-third of women and two thirds of men use tobacco in one form or another [1].

In India tobacco problem is more complex than probably that of any other country in the world, with a large consequential burden of tobacco-related diseases and death [2].

Awareness of the hazards of smokeless tobacco consumption is very low in rural populations. On the other hand, many believe that tobacco use has medicinal value for curing or

palliating common discomforts such as toothache, headache, and abdominal pain. This leads to advice for initiating tobacco use from adults to other nonusers, even children [3].

Countries in South Asia are major producers of tobacco and the region is a net exporter. . Tobacco leaf production has been increasing steadily for many decades, and has doubled since the 1960[4].The increasing demand for tobacco in Bangladesh is being met by imports, especially from India[5].

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Although smoking by women is not well accepted in Indian society, consumption of smokeless tobacco is well accepted. Globally consumption of tobacco is a major risk factor for mortality with an estimated five million people killed every year [1,6,9]. In South East Asian countries particularly in India, tobacco is consumed in various smokeless forms like chewing and snuffing for eg. “Pan masala”(a balanced mixture of betel leaf with lime, arecanut, clove, cardamom, mint, tobacco, essence and other ingredients) “Betel Quid” (mixture of areca nut, slaked lime and flavoring ingredients Which are wrapped in betel leaf) “Gutka” (a mixture of crushed areca nut,tobacco, catechu, paraffin, lime and sweet or savory flavorings), Mishri (tobacco containing teeth cleaning (powder) and Snuff (pulverized tobacco leaves)[10].

This tobacco consumption also causes cardiovascular diseases, cancers and respiratory diseases. In addition among women smokeless tobacco consumption would lead to infertility and in pregnant women, it causes adverse reproductive outcome like abruptio placenta, intrauterine growth retardation (IUGR), preterm labour, intrauterine death etc. Hence women are at larger risk of morbidity when tobacco is consumed in any form. About 1/3 of global population aged over 15 years are smokeless, among them 12% are women[11]. Hence this study was taken up to study the prevalence and factors contributing to tobacco use in rural area.

Aim and objectives

1. To know the prevalence of smokeless tobacco consumption among females of more than 15 years of age.
2. To study the factors responsible for smokeless tobacco consumption among them.

Material and methods

This cross sectional study was conducted in a slum area of Kaladagi RHTC, attached to the Department of Community Medicine, S. Nijalingappa Medical College, Bagalkot during June 2010. It consists of 114 families with total population of 580. In this area 255 women were found in the age group of ≥ 15 years and they were

all included in the study.

After obtaining informed consent, demographic details like name, age, occupation, educational status were obtained. Information regarding tobacco use and its determinants were taken using predesigned, pre-structured questionnaire. Data was tabulated and analyzed using Open Epi. Software.

Results

In present study 17.6% of women were chewing tobacco. 40% of women were chewing tobacco since less than 10 years and 37.7% of women were chewing tobacco since 10-20 years but 15.6% of the women were chewing tobacco since 20-30 years; only 6.7% of women were chewing tobacco since more than 30 years. 37.8% of women were chewing less than one pack of tobacco per day and 26.7% of women were chewing two packs tobacco per day, as shown in Table -I. 88.89% of women were chewing tobacco because of toothache. There is association between tooth ache and tobacco consumption and it is statistically highly significant also. Chi-square value=190.8 ($P<0.0000001$). Only 11.11% were chewing tobacco because of other reasons as shown in Table-II.

Among the tobacco chewers 11.11% of the women belonged to each of 15-24 years and 65-74 years age group, 6.67% of women belonged to 25-34 years age group and 26.67% of women belonged to 35-44 years age group but 24.44% of the women belonged to the age group 45-54 years and 15.56% of the women belonged to the age group 55-64, years only 4.44% of women belonged to 75-84 age group. Among the chewers, 44.45% of women belonged to the socio-economic class III, 33.33% of the women belonged to the socio-economic class IV and 11.11% of the women were in the socioeconomic class II and V. 57.78% of women who were chewing tobacco among house wives, 33.33% women were chewing tobacco were laborers and 4.44% of students who were chewing tobacco were girls. Lady teachers are not at all chewing tobacco, only 4.45% of women were chewing tobacco in other occupations as shown in Table-III.

Discussion

In countries of South Asia, particularly India, traditional values do not favor smoking by the young women, but there is no such taboo against using smokeless tobacco. Thus, most women who use tobacco use it in smokeless forms[3]. In our study around 18% of the women gave history of tobacco consumption and similar observations were found in Bangladesh, in a study conducted by Islam N. 20–30% of women in rural areas are estimated to use smokeless tobacco[12]. In our study around 78% of the women belonged to middle class but a study conducted by Gupta PC, observed that 60.5% of women belonged to middle class[13]. In our study use of smokeless tobacco among female students was 4.4% and in a study conducted by Madhumita Dobe, South East Asia Region they got 8.4% of female students using smokeless tobacco[14].

In the present study, it was observed that 18% of the women had used tobacco in smokeless forms, whereas National sample survey organization (NSSO) 1999 found the prevalence was 10.9 % [15]. This difference could be due to the cohort effect and also probability of increased tobacco consumption in smokeless form. Age specific tobacco prevalence in our study was maximum in the age group of 35-44 years constituting 26%, where as NSSO 1999 observed that it was maximum in 60 + age group in rural females. An oral use of smokeless tobacco is widely prevalent in the South East Asia Region; the different forms include chewing, sucking and applying tobacco preparation to the teeth and gum as a home remedy for the dental caries and bleeding gum. In our study maximum (88.89%) of the respondents who used tobacco had toothache as the cause for starting its use. The association between the tobacco use for toothache was found to be statistically highly significant ($p < 0.0001$). Evidence for a trend toward increasing use of tobacco and areca nut product like gutka, pan masala and tobacco toothpaste by youth has been gathered in several recent studies[15].

In our study tobacco use among students was 4.44%. According to global youth tobacco survey, the prevalence of smokeless tobacco among young students in South East Asia Region range from 4-

20% [16-20]. In India, it was found to be 1.9% among female students [14]. The use of tobacco products as dentifrice among school going children is a special problem in India.

In South East Asia, especially there is evidence of demonstrable feasibility and efficacy of anti-tobacco education for the community through controlled intervention studies in areas with high prevalence of tobacco chewing. There is need for bringing about a change through appropriate information, education and communication (IEC) interventions in the wide spread belief that smokeless tobacco use is less harmful than smoking and thus because of lack of information many thousands of pregnant women continue with smokeless tobacco use during their pregnancy. Smokeless tobacco use needs to be given a priority during planning and management of comprehensive tobacco control [14].

Nearly 8000 chemical constituents have been identified in smokeless tobacco, while close to 4000 are present in tobacco smoke. These include alkaloids such as nicotine, nornicotine, cotinine, anatabin, anabasin; aliphatic hydrocarbons present in the waxy leaf coating and hundreds of isoprenoids that give the aroma to tobacco, phytosterols such as cholesterol, campesterol etc. and alcohols, phenolic compounds. Chlorogenic acid, rutin carboxylic acids and several free amino acids are also present in tobacco[21]. In addition a wide range of toxic metals including mercury, lead, cadmium, chromium and other trace elements have been found in Indian tobacco [22].

Awareness of the hazards of smokeless tobacco use is very low in rural population and many believe tobacco has curative or palliative effect for common discomforts such as toothache, headache and abdominal pain.[23] **Conclusion**

In our study we noticed 18% of the women were using smokeless tobacco, for various reasons, with false belief that smokeless tobacco is harmless. This smokeless tobacco has been found to have caused many precancerous and cancerous conditions. Hence awareness of the hazards of smokeless tobacco needs to be raised among them by systematic efforts of health authorities.

Table.No.I. Showing the mode of tobacco consumption by the participants.

Tobacco consumption	Number	Percentage
Present	45	17.6%
Absent	215	82.4%
Total	255	100%
Duration in years	Number	%
<10	18	40
10 20	17	37.7
20 30	7	15.6
>30	3	6.7
Total	45	100
Reason	No	%
Tooth ache	40	88.89
Other reasons	5	11.11
Total	45	100
Pack per day	No	%
>1	17	37.8
2	12	26.7
3	7	15.5
4	6	13.3
≥5	3	6.7
Total	45	100

Table.No.III. Demographic profile of study participants.

Age in years	No	%
15 24	5	11.11
25 34	3	6.67
35 44	12	26.67
45 54	11	24.44
55 64	7	15.56
65 74	5	11.11
75 84	2	4.44
Total	45	100
Socioeconomic class	Tobacco chewers	Total
	Yes	%
I	0	0
II	5	11.11
III	20	44.45
IV	15	33.33
V	5	11.11
Total	45	100
Occupation	No	%
Student	2	4.44
Laborer	15	33.33
House wife	26	57.78
Teacher	0	0
Others	2	4.45
Total	45	100

Table No. II. Relation between tobacco consumption and tooth ache.

Tooth ache	Tobacco consumption				Total
	Yes		No		
	No	%	No	%	
Present	40	88.89	5	2.38	45
Absent	5	11.11	205	97.62	210
Total	45	100	210	100	255

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A Study of Socio-Demographic Profile of Geriatric Population in Rural Field Practice Area of Adichunchanagiri Institute of Medical Sciences

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Abstract

Introduction: In India 7.7% of the total population is constituted by 60+ year age group. With the advancement of medical sciences and improvement of social conditions there has been great change in recent times. The purpose of this study is to delineate the socio demographic profile of geriatric population of rural area.

Methodology: A cross sectional study was done on 2000 elderly in the rural field practice area of Adichunchangiri Institute of Medical Sciences, B G Nagar, Mandya district using a structured and pretested Performa.

Results: The study revealed that 68.5% of the elderly were in the age group of 60-69 years and 96% were Hindus. Majority of the subjects belonged to class IV and V of Modified B G Prasad socio economic classification. 90.6% of the men were dependent on agriculture.

Conclusion: The study provides data to plan services and programmes for betterment of aged, hope this study yields valuable information required for the design of the services to be provided for this special group.

Key words: old age, rural area, socio- demographic profile

Introduction

The geriatric population is defined as population aged 60 years and above[1]. Today 60% of those aged 60+years live in the developing countries and their proportion will increase to 80% by 2050. In India 7.7% of total population is constituted by 60+ years age group [2]. With the advancement of medical sciences and improvement of social conditions there has been great change in recent times. Although it is true that India's philosophy and culture prescribe reverence and respect for the aged and recommend the care of the aged parents as a form of worship, these values are facing erosion at present. This has been the result of breakup of joint family system of living, migration of younger members to the urban area for employment and the competitive nature of modern

living. Although 20% of aged are known to enjoy a fairly good level of health and contentment, others present with various problems[3]. The purpose of this study is to delineate the socio-demographic profile of geriatric population of rural area.

Methodology

A cross sectional study was conducted in rural field practice area of Adichunchangiri Institute of Medical Sciences, B G Nagar, Mandya district which caters a population of 25974. The sample size was 2153 which was estimated by using the proportion of elderly people (7.7%) with an allowable error of 15%. Out of 2153 elderly interviewed, 153 subjects did not participate in the study thus the final subjects consented and participated in the study were 2000. The data was collected by personal interview method between

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October 2006 to April 2008 using a structured pretested performa.

Results

Among 2000 elderly, 1370 elderly (68.5%) were in the age group of 60-69 years (young old), 367(18.35%) were in the age group of 70-79 years(old old) and 263(13.15%) were in the age group of 80+ years(oldest old). In all the three groups women exceeded men. The mean age was found to be 68.18 years with a standard deviation of 8.25 in case of males and in case of females mean age was 66.26 years with standard deviation of 8.46.

Out of 2000 elderly, 1920(96%) of the study population were Hindus, 62(3.1%) were Muslims, 14(0.7%) were Jains and 4(0.2%) were Christians. The study (Table I) showed 390 (53.13%) and 521(41.15%) of elderly men and women living in nuclear families respectively. In present study(diagram I) majority of the study subjects belonged to class IV (males 252, 34.33% & females 359, 28.36%) and class V (males 248, 33.78% & females 450, 35.55%) according to modified B.G Prasad classification. The study (Table II) revealed that 47.96% and 83.25% men and women were illiterates respectively and majority of men 661(90.06%) involved in agriculture (Table III).

Discussion

The rapid urbanization and societal modernization has brought in its wake a breakdown in family values and framework of family support, economic insecurity and loneliness which are also true with the present study.

In the present study majority of the subjects were of 60- 69 years age group which was also observed by Natarajan VS and an ICMR study done by Bela Shah et al. It is evident from the above findings that the country is on the verge of facing the burden of elderly citizens which is the picture of developed countries.

The present study revealed that majority of the subjects were Hindus(96%) followed by Muslims(3.1%) which is similar to the census report of 2001 for Mandya district. The findings differed from that of Charan Singh and Mathur JS study, the difference being due to geographical

variation of the religion followed.

As discussed earlier urbanization has an impact on the families of rural area which is reflected in the form increased nuclear families. In this study majority of the elderly belonged to nuclear families and similar findings are reported by Niranjana GV et al and Venkoba Rao in their studies.

The socio-economic insecurity among elderly was observed in the study because majority of the subjects belonged to class IV and V of modified B G Prasad socioeconomic classification. Similar were the findings of Niranjana GV and Natrajan VS . The present study support the report “An adequate financial resource is major economic problem in Indian elderly”, by Dak TM et al. Kinsella K in his study on ageing in third world reported that there were more women among illiterate elderly persons, the observations of the present study were in line with the Kinsella K study and also Kishore S et al study.

The study provides data to plan services and programmes for betterment of aged, hope this study yields valuable information required for the design of the services to be provided for this special group.

Table I : Showing distribution of rural elderly according to type of family

Type of family	Males		Females		Total	
	No	%	No	%	No	%
Nuclear	390	53.13	521	41.15	911	45.55
Joint	140	19.07	329	26.00	469	23.45
3 generation	204	27.80	416	32.85	620	31.00
Total	734	100	1266	100	2000	100

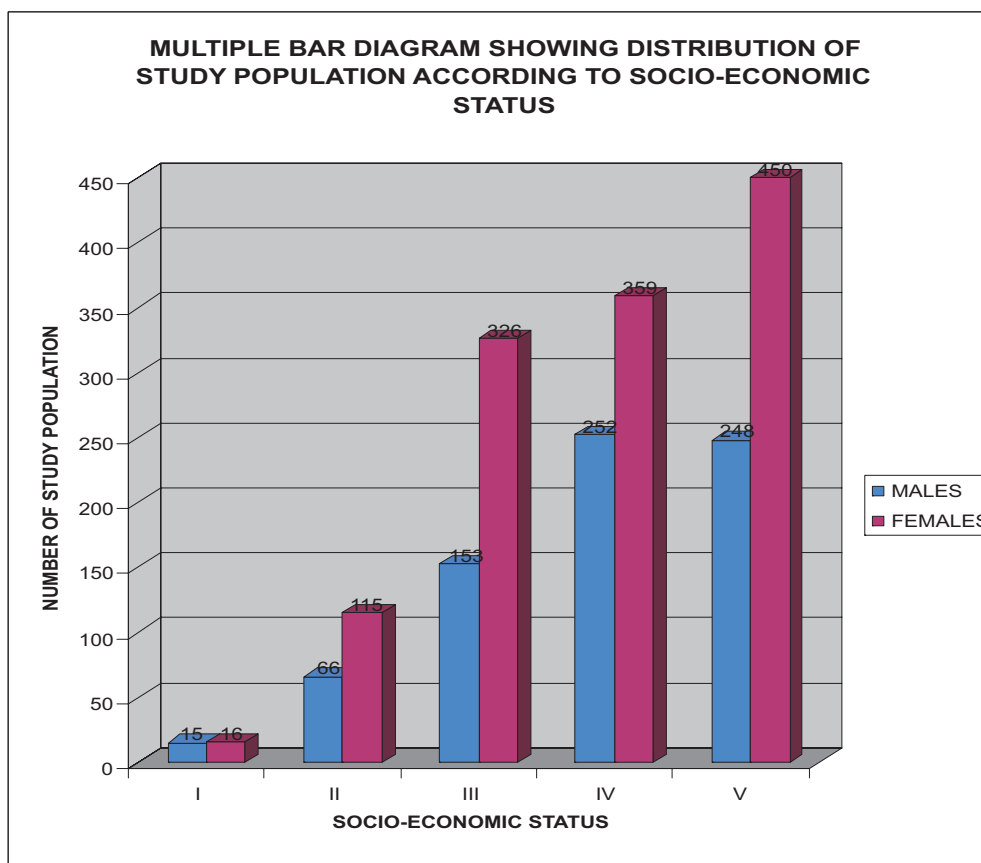
Table II: Showing distribution of rural study population according to literacy status

Literacy status		Males		Females	
		No	%	No	%
Illiterates		352	47.96	1054	83.25
Literates	Primary	117	15.95	85	6.72
	Middle	106	14.44	45	3.55
	High	129	17.57	77	6.08
	PUC	17	2.31	05	0.40
	Degree	13	1.77	00	00
Total		734	100	1266	100

Table III: Showing distribution of elderly according to occupation

Occupation	Males		Females		Total	
	No	%	No	%	No	%
Agriculture	661	90.06	617	48.75	1278	63.9
Carpenter	12	1.64	00	00	12	0.6
Petty business	04	0.54	16	1.27	20	1.0
Retired	23	3.13	00	00	23	1.15
Laborer	25	3.40	76	6.00	101	5.05
Tailor	07	0.95	04	0.31	11	0.55
Contractor	02	0.28	00	00	2	0.1
Household	--	--	553	43.67	553	27.65
Total	734	100	1266	100	2000	100

Diagram I



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Awake Craniotomy- for Management of Intracranial Lesions Safely in Eloquent Areas of Brain.

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Abstract

The awake craniotomy is a procedure where the craniotomy and excision of the lesion is done in awake patient without general anaesthesia. This surgical technique enable surgeons to avoid damaging normal cerebral regions and allow real-time patient feedback while operating on important functional areas of brain like motor cortex and speech areas (motor, somatosensory, and language areas). Such surgical interventions would not be possible without anesthesia. This technique was originally introduced for the surgical treatment of epilepsy and has subsequently been used in patients undergoing surgical management of supratentorial tumours, deep brain stimulation and near critical brain regions. This surgical approach aims to maximize lesion resection while sparing important areas of the brain.

Keywords: Awake craniotomy, anaesthesia, cortical mapping, motor cortex, speech areas.

Introduction

The main challenge of excising the tumour is the radical removal which is limited due to adjacent eloquent areas. A general assertion states that the larger the resection the lower the risk of recurrence of the lesion and the higher the chance of the patient's survival. But an extensive tissue excision may favour the occurrence of an unpredictable degree of disabilities like motor weakness and language disturbances affecting patient's social life. Therefore, the aim to remove the maximum amount of lesion without impairing neurological function, has pushed the surgeons to develop sophisticated surgical approaches to be performed in awake and responding patients, so as to evaluate neurological dysfunction before tissue removal [1].

The awake craniotomy technique was originally introduced for the surgical treatment of epilepsy in second half of 19th century. Subsequently, this surgical practice has been extended also to the resection of tumour involving the functional cortex and finally, in more recent years, the indications have further been extended to include the removal of supratentorial tumours,

regardless of the involvement of the cortex [2].

The main advantage for the awake neurosurgical approach is to facilitate intraoperative electrocorticography and cortical mapping for the accurate identification of brain areas which control motor function and speech [3].

Functional magnetic resonance imaging is a non-invasive modality as preoperative and intraoperative mapping of brain functional areas, however radiological and functional correlation is not always accurate. Intraoperative testing of language and motor function continues to be the gold standard for a radical surgical resection while minimizing eloquent brain damage.

Apart from tumour anatomical location, mandatory prerequisites for awake craniotomy are a fully cooperative patient and optimal collaboration between anaesthesia and neurosurgical staff, to realize what is defined as function-controlled neurosurgery [4,5].

Evolution of general anaesthesia in neurosurgery benefits adequate control of vital parameters, neurological function and intracranial pressure; at the same time it provides the optimal

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working conditions for the neurosurgeon; but intraoperative monitoring of functional lesions of the central nervous system is severely inhibited by general anaesthesia: some higher cortical brain functions (i.e. speech) cannot be monitored during surgery.

Case reports

Case 1: In a 56 year old male patient, with history of two episodes of seizures, in MRI revealed enhancing lesion just anterior to motor cortex. Neurologically patient had mild weakness of limbs. He underwent awake parietal craniotomy, cortical mapping and excision of the lesion safely. Throughout the procedure, patient was cooperative and conscious and limb movements were monitored.

Case 2: A 27 year old female, presented with raised intracranial pressure (ICP) symptoms with no focal deficits. Radiological evaluation revealed left temporal lesion. She underwent left temporoparietal craniotomy and cortical mapping was done. She was communicating throughout the procedure. Her speech was monitored. Lesion was excised safely. She had no focal deficits.

Case 3: A 45 year old male patient presented with mild weakness of right upper limb and no other neurological deficits. Radiological evaluation revealed 2.5 cms lesion adjacent to motor cortex. He underwent awake craniotomy with cortical mapping for motor cortex. Contralateral movements were monitored during the procedure. However, he had mild worsening of the motor power postoperatively due to cerebral edema which subsequently recovered.

Anesthetic technique used

In these cases, after a thorough preoperative evaluation of the patient, procedure was informed to patient in detail.

Patients were premedicated with Inj. Midazolam 1mg I.V. and Inj. Fentanyl 50 mcg I.V. Under aseptic precautions scalp block was performed using 23G spinal needle with 40ml of local anaesthetic (20 ml of 2% Lignocaine with Adrenaline + 20 ml of 0.5% Bupivacaine).

A line of intradermal, subcutaneous, subfascial, intramuscular and periosteal infiltration

was given, passing through the glabella and occiput, encircling the head, to provide anaesthesia of the scalp by specifically blocking the supraorbital, supratrochlear, temporomalar, deep temporal, auriculo-temporal, lesser and greater occipital and greater auricular nerves. Patients were sedated with a bolus dose of dexmedetomidine 1mcg/kg body weight, followed by infusion of Propofol at a dose of 0.5-1.0 mg/kg/hr until the opening of dura, after which infusion was stopped. No more sedation was required until the end of the procedure. Patients were comfortable and communicative, maintaining stable vital signs throughout the procedure and tolerated it well. Table I shows the anaesthetic agents which can be used in awake craniotomy.

The anaesthesiologist dealing with awake craniotomy has to be aware of the difficulties in predicting the individual right dose of a drug for an awake and anxious patient, as well as respiratory complications due to a post critical state after seizures.

Complications

Complications of awake craniotomies can include seizures, swelling of the brain, nausea and vomiting, decreased level of consciousness, neurological deficits, pain and loss of patient cooperation.

Conclusion

Awake craniotomy is procedure which is very useful in selective patients where the lesion is located in eloquent areas. It gives real time monitoring functional integrity. Due to developments of newer anaesthetic drugs and modern monitoring systems, it is safe and effective. Functional MRI though useful has its own limitations. Cortical mapping gives better clue as an intra-operating monitoring tool.

Table I : Anesthetic agents used in awake craniotomy

Drugs	Mechanism of	Advantages	Disadvantages	Classification
Propofol	GABAA agonist	Rapid onset; antiemetic; antiepileptic; decreased intracranial pressure	Respiratory depression in combination with other narcotics	Intravenous anesthetic
Remifentanil	Selective μ - opioid agonist	Rapid offset; blunted hemodynamic responses	Bradycardia	Opioid
Dexmedetomidine	Selective α 2- agonist	Anxiolysis; analgesia; respirations maintained	Bradycardia; hypotension	Adrenergic receptor agonist
Fentanyl, (if possible avoid)	Opioid agonist	Pain control	Prolonged wakeup; respiratory depression	Opioid
Midazolam, (if possible avoid)	GABAA agonist	Amnesia	Causes confusion during awakening	Benzodiazepines

Abbreviation: GABAA, γ -aminobutyric acid ionotropic receptor family A.

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Septicemia Due to ESBL Producing *Klebsiella Pneumoniae* in a Multi Transfused Thalassemic Patient with Splenectomy

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Abstract

The spleen plays a major role in the opsonisation of capsulated bacteria. A thalassemic patient is treated with prophylactic antibiotics, vaccines, chelating agents, blood transfusions and many a time, with splenectomy. The surgery predisposes patients to infections with capsulated organisms. Vaccines can prevent occurrence of streptococcal and haemophilus infections to some extent. However Gram negative septicemia due to capsulated bacteria can be overwhelming in these patients and when caused by multidrug resistant strains can warrant the need for administration of expensive antibiotics to save the life of the patient.

Key words: Thalassemia, Splenectomy, Sceptecimia, ESBL *Klebsiella*

Introduction

Thalassemia is a heterogeneous group of genetic diseases in which there is a defective synthesis of one or more globin chains. Patients with thalassemia are transfusion dependent and a large proportion of them require splenectomy. Overwhelming sepsis is a recognised complication in these patients. Encapsulated organisms such as *Streptococcus pneumoniae* and *Haemophilus influenzae* are the commoner organisms involved [1]. We report a case of a thalassemic child who had been multitransfused and splenectomised and presented with septicemia. The isolate was an extended spectrum beta lactamase (ESBL) producing *Klebsiella pneumoniae*, and this escalated the cost of treatment due to the need for administration of carbapenems.

Case report

A ten year old girl child was admitted to the paediatric ward of JSS hospital Mysore, on the 9th of June 2011 with a history of fever of 5 days duration. The fever was sudden in onset, gradually increasing with no diurnal variation, nor any chills and rigors. There was no history of any associated vomiting, diarrhoea, cold or cough.

The child was febrile on examination, with fever of 104 °F. The BP was 100/60 mmHg, pulse 110/min; respiratory rate 28/min. Mild icterus and pallor were noted. Multiple pustules suggestive of pyoderma were noted. General physical examination revealed grade 2 protein energy malnutrition (PEM) and mild hepatomegaly.

Past history revealed that the child was a known case of thalassemia major and had undergone splenectomy for the same 3 years back. She had been receiving blood transfusions every month for the last 7 years. She had not received any chelating agents because of financial constraints. The child had received all the scheduled vaccines with the boosters, and in addition, Hib vaccine and pneumococcal vaccine had been administered two weeks prior to splenectomy.

The child was investigated for the possible causes of fever. Blood counts, chest radiogram, liver and kidney function tests, complete blood count, febrile agglutination panel, serology for HIV and Hepatitis and blood culture were done. The investigations revealed haemoglobin of 7 gm/dl, total leukocyte count of 33800/ mm³ with

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lymphocytosis (Neutrophils -39%, Lymphocytes - 57%, Eosinophils -2%, Metamyelocytes and Promyelocytes 1% each). Total and direct bilirubin were slightly raised at 1.8mg/dl and 0.9mg/dl respectively. Liver enzymes were raised; ALT - 103U/l and AST -92U/l. Serological tests and radiogram did not reveal any significant findings. Kidney function tests were within normal limits.

The child was started on palliative treatment and parenteral amoxycylav (600mg tid) was given but fever persisted. Blood culture done on two consecutive samples yielded the growth of ESBL producing Klebsiella pneumonia. ESBL production was confirmed by disc approximation method. The isolate was however sensitive to meropenem, imipenem and amikacin. Treatment with meropenem was begun immediately and the child recovered dramatically. She was discharged after giving a booster dose of pneumococcal vaccine and also put on penicillin prophylaxis

Discussion

A major long term risk following splenectomy is overwhelming sepsis. In a literature review involving 19680 post splenectomy patients by Bisharat et al (2001) the overall incidence of infection following splenectomy was 3.2% with a mortality rate of 1.4%. Of these, the incidence was highest in patients with thalassemia major (8.2%). The mortality rate in this group was also higher (5.1%) [2]. Not surprisingly the mortality rate was higher in the paediatric population.

Though encapsulated organisms like Streptococcus pneumonia and Haemophilus influenzae are more commonly involved, there is increasing evidence for overwhelming sepsis due to Gram negative bacilli. A possible explanation is that vaccination and antibiotic prophylaxis may prevent the occurrence of streptococcal and haemophilus infections. Ghosh et al reviewed a series of 46 thalassemic patients who had undergone splenectomy, and among this group, infections were caused by Gram negative bacilli such as Klebsiella, Pseudomonas, Aeromonas and Campylobacter [3]. In another study by Ejstrud et al, of 539 splenectomised patients, enterobacteria

were the predominant organisms causing infections[4].

Klebsiella pneumoniae was isolated from our patient, and the isolate turned out to be multidrug resistant. Patient did not respond to the parenteral treatment with amoxycylav that was started before the susceptibility results were available. Though the child had received almost all necessary vaccines, ESBL klebsiella playing truant was a paradox of misfortune and need arose for administration of expensive medication in the form of carbapenem antibiotic, significantly escalating the cost of management. As the risk of overwhelming infections is life-long in these patients, measures should be taken to keep its occurrence to a minimum. Certain reports recommend re-vaccination with polyvalent pneumococcal vaccine after three years [5]. Others have suggested administration of intravenous immunoglobulins[2]. Although these measures may be required for over-all management, vigilance and prompt treatment can be life-saving.

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Glycogen Storage Disease Type I

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Abstract

Glycogen storage diseases (GSD) are inherited autosomal recessive disorder. Type-I GSD (Von Gierkes disease) is due to glucose-6-phosphatase defect, which mainly affects liver and is life threatening if not treated. The main features are fasting hypoglycemia, lactic acidosis, hyperuricemia and hyperlipidemia. Here we present a case of six month female baby who presented with fever, abdominal distension and on investigation biochemical parameters were suggestive of type-I GSD.

Key words: Glycogen storage disease, Von Gierke's disease

Introduction

Glycogen storage diseases (GSD) are a group of diseases resulting from a defect in an enzyme required for glycogen synthesis or degradation of glycogen. They result either in the formation of glycogen that has an abnormal structure or in the accumulation of excessive amount of normal glycogen in the specific tissues as a result of impaired degradation[1]. Each type of GSD is because of a specific enzyme deficiency.

GSD-type Ia is due to the deficiency of enzyme Glucose - 6 - Phosphatase, GSD type-Ib is because of endoplasmic reticular glucose - 6-phosphate translocase deficiency, GSD type-Ic is due to defect in microsomal phosphate transport and type-Id is due to defect in microsomal glucose transporter (GLUT-7) (Fig-I)[2]. Glucose -6-phosphatase is the enzyme required for the conversion of glucose - 6 - phosphate to glucose, in the last step of glycogenolysis (breakdown of glycogen). Glucose-6 -phosphatase is present in the hepatic and renal lumen of smooth endoplasmic reticulum (SER). Glucose-6-phosphate translocase present on the smooth endoplasmic reticular membrane of liver, kidney and pancreatic

cells, required for the transport of Glucose -6-Phosphate from the cytosol to the smooth endoplasmic reticular lumen, where Glucose- 6 - Phosphate is converted to glucose by the enzyme Glucose-6-Phosphatase(Figure - II)[2,3].

Case History

A six month old female child was brought to the pediatric outpatient department, with chief complaints of fever since eight days and abdominal distention. Fever was sudden in onset, progressive in nature. There was no history of chills, rigors, convulsions, cough, cold, vomiting, ear discharge, edema or breathlessness. On examination, baby was afebrile and the weight was 4.25 kg. No pallor, icterus, cyanosis, lymphadenopathy or edema was found. Activity, appearance and reflexes were normal. On per-abdominal examination there was hepatomegaly, other systemic examination was normal. Ultrasonography of the abdomen showed moderate hepatomegaly with diffuse parenchymal disease, no focal lesion, biliary path and portal vein were normal, with mild to moderate ascities. Blood sample was collected for pathological and biochemical analysis. The serum was milky white

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(Figure-III). Blood chemistry showed hypoglycemia, hypertriglyceridemia (1070 mg/dL), hypercholesterolemia, hypoproteinemia (3.6 g/dL), hypoalbuminemia (0.7g/dL), reversal of albumin:globulin (A:G) ratio and elevation in Alanine Amino Transferase (ALT) (1868 U/L) and Aspartate Transaminase (AST) (396 U/L). Complete hemogram revealed hemoglobin as 11.4 g/dL, RBC count 4.1 million/mm³, WBC count – 18,500/mm³, differential leukocyte count was polymorphs – 55%, lymphocytes – 42%, eosinophils-0.3% and platelet count was 3.7 lakh/mm³. Peripheral smear showed microcytic hypochromic anemia with neutrophilia. Histopathology revealed enlarged hepatocytes due to accumulation of glycogen.

Discussion

The present case showed milky white serum, hepatomegaly, episodes of hypoglycemia, hypertriglyceridemia, hypercholesterolemia, hypoalbuminemia, reversal of A:G ratio and elevation of ALT and AST, all the features suggestive of GSD–Ia or Ib.

GSD type Ia and Ib are autosomal recessive, the structural gene for glucose-6-phosphatase is located on chromosome 17q[21], the gene for translocase is on chromosome 11q[23,24]. In GSD Ia and Ib the deficiency of glucose – 6 – phosphate in the liver blocks the final steps of glycogenolysis and gluconeogenic pathways. As expected, these patients are unable to maintain normal blood glucose levels in the fasting state, resulting in episodes of hypoglycemia. Synthesis of ribose can be stimulated by the increased pentose phosphate shunt [2].

Hyperuricemia is caused by both decreased renal clearance and increased production. Lactate competes with uric acid for excretion in the kidney. Accumulation of phosphate esters results in decreased intrahepatic phosphate. This relieves the physiological block on the hepatic AMP – deaminase, thus degradation of adenine nucleotide increases and uric acid is produced.

Hyperlipidemia is a result of both increased synthesis of triglycerides, VLDL, LDL and decreased peripheral lipolysis. The exaggerated

glycolytic pathway produces a generous supply of NADH, NADPH, abundant acetyl CoA and glycerol; thus both substrates and cofactors are available for hepatic triglyceride synthesis. Excess accumulation of glycogen and fat in the liver and kidney leads to decreased functioning of liver and end up in hypoalbuminemia and increased levels of AST and ALT.

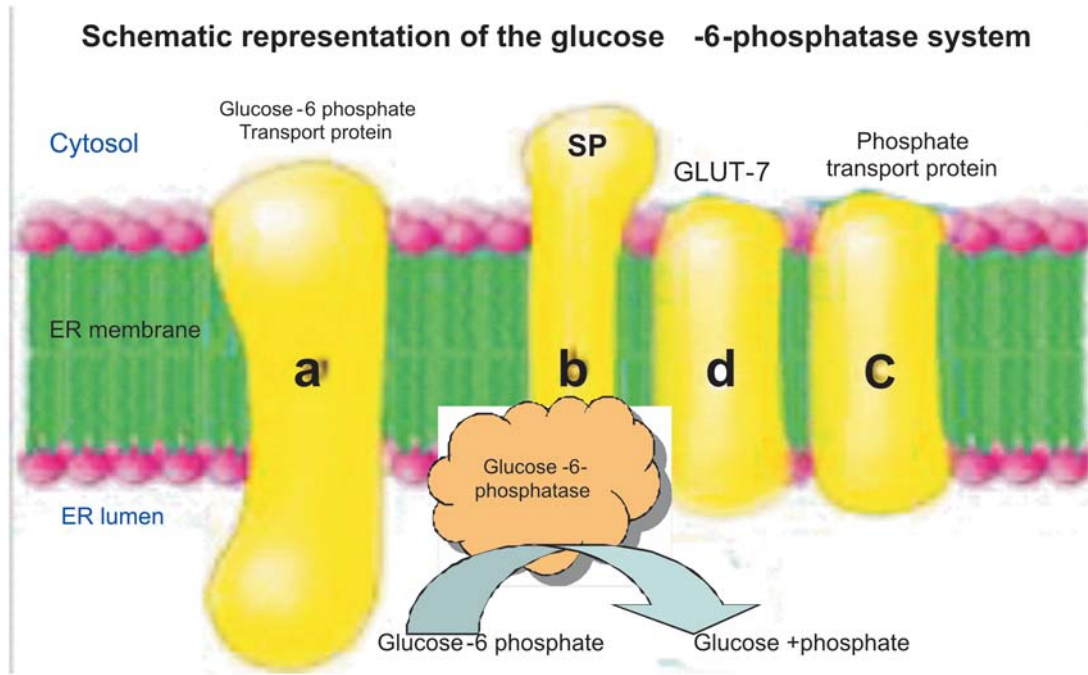
Long term complications in the type I GSD mainly affect liver and other organs. In most of the patients growth is impaired and short stature. There is increased risk of pancreatitis. and hepatic adenomas secondary to the lipid abnormalities. Many have renal stones, nephrocalcinosis, hypertension and altered creatinine clearance. Pulmonary hypertension has been reported, osteoporosis and gout are later complications.

The limitation, while diagnosing the present case was that the patient's parents refused for the estimation of glucose – 6 – phosphatase, glucose – 6 – phosphate translocase and mutation analysis.

Diagnosis can be done by taking liver biopsy, evaluation of enzyme activity and effects of glucagon/epinephrine administration. In our patient liver biopsy revealed enlarged hepatocytes due to accumulation of glycogen and lipids. The patient was treated for respiratory infection with antibiotics and corn starch meal was prescribed to maintain the blood glucose level.

In conclusion, the infant in the present case with hepatosplenomegaly, episodes of hypoglycemia and milky white serum with dyslipidemia, hyperuricemia could be a case of GSD type Ia or type Ib.

Fig-I: Glucose-6-phosphatase model



SP – Stabilising protein
 ER – Endoplasmic reticulum
 GLUT-7 – Glucose transporter

Fig-II: Hepatic endoplasmic reticular import, conversion and export of glucose-6-phosphate

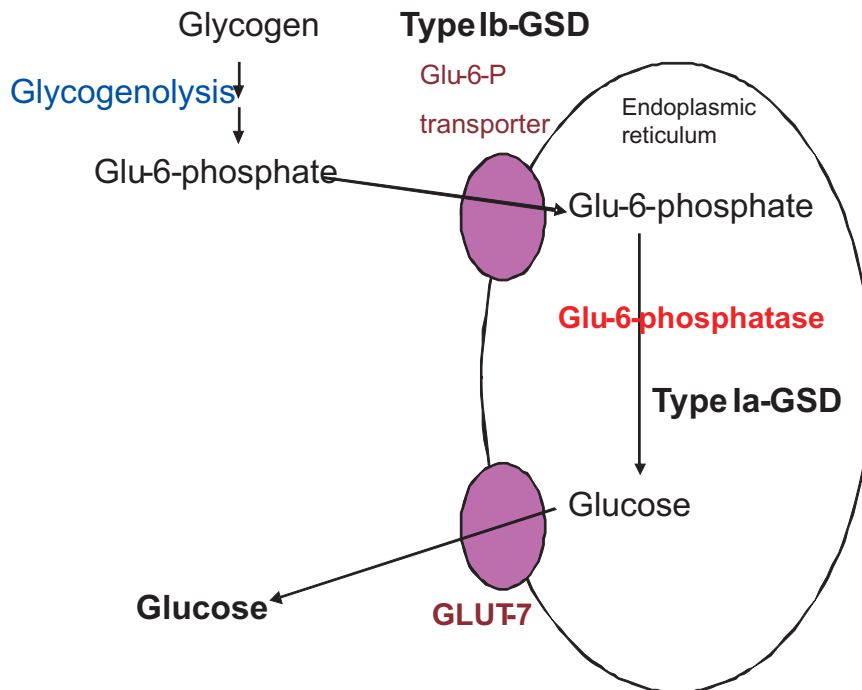


Fig-III: Serum sample of the case and a control

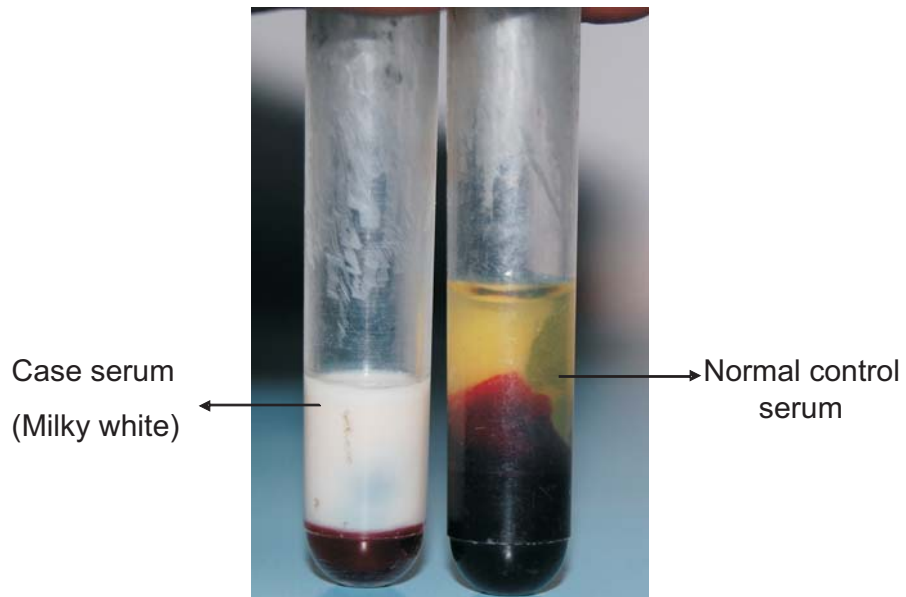
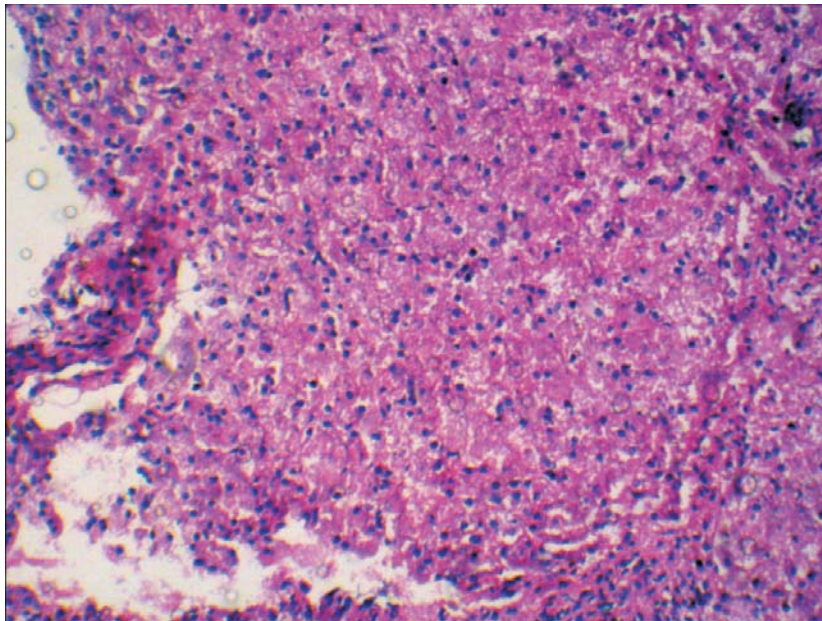


Fig-IV: Histopathology of liver biopsy



Liver biopsy sections from patients with type I glycogen storage disease showing enlarged hepatocytes due to deposition of glycogen

Table I: Biochemical parameters of the case

Sl. No	Investigation	Reported Value
1.	Glucose (RBS)	208.7 mg %
2.	Uric acid	34 mg%
3.	Serum Triglycerides	1070.0 mg %
4.	Serum Total Cholesterol	376.0 mg%
5.	Serum HDL Cholesterol	15.5 mg %
6.	Serum LDL Cholesterol	146.5 mg %
7.	Serum VLDL Cholesterol	214.0 mg %
8.	Total Protein	3.6 g %
9.	Albumin	0.7 g %
10.	Globulin	2.9 g %
11.	S.G.O.T (AST)	396.0 U/L
12.	S.G.P.T (ALT)	1868.0 U/L

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Langer's Muscular Axillary Arch- Features and its Importance

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Abstract

Anatomical variations are common in axilla. These are usually encountered during axillary explorations for breast cancer and other surgical procedures. The most common being the presence of a muscular slip known as the axillary arch. This muscle, usually arises from the latissimus dorsi to be attached to the pectoralis major (which is more common) or to the coracobrachialis or to the fascia over the biceps brachii. This may be single or present as multiple bands and may or may not be clinically apparent. The axillary arch may cause thoracic outlet syndrome like symptoms, may pose difficulty in axillary explorations for various surgical procedures, reconstruction techniques and axillary bypass operations. The current case report is to discuss the features of this variation, with an emphasis on its surgical implications.

Key words: axilla, muscular slip, latissimus dorsi, pectoralis major.

Introduction

During routine dissection conducted for the medical students, an anomalous muscular slip was found in the right axilla of a 60 year old male cadaver as shown in figure I. This slip was triangular in shape, with base attached to the latissimus dorsi and apex to the posterior aspect of pectoralis major close to its insertion, measured 7.5cm in length and 6mm in width. The muscular slip passed over the axillary neurovascular bundle. No separate nerve supplying this variant muscle was found. The axillary anatomy on the left side was normal.

Discussion

Variant muscular slips may be present in the axilla. One arrangement of these fibres, when present in humans is in the form of an arch stretching across the axilla between the pectoralis major and the latissimus dorsi[5]. This when present, measures 7-10cm in length and 5-15mm in breadth.[6,10] It has been termed by various names like Langer's axillary arch, arcus axillaris, axillopectoral muscle or pectorodorsal muscle. It has a significant frequency of 7-13% in dissecting

room specimens. This was discovered by Ramsay in the year 1795. It was Langer who described this muscle more accurately, hence the name Langer's axillary arch [1,2].

In its complete form, the muscle arises from latissimus dorsi, inserts into the tendon of pectoralis major. While in its incomplete form, it presents with varying insertions into pectoralis minor, coracobrachialis, long/short heads of biceps brachii, teres major, corocoid process, first rib, axillary fascia or the coracobrachial fascia [1]. The blood supply of the arch is derived from the lateral thoracic vessels, while the innervation is being provided by the thoracodorsal nerve, the caudal pectoral nerve or by the perforating branches of the 2nd and 3rd intercostal nerves or from the pectoral loop of brachial plexus [1,3,4]. Though a separate innervation for the arch was not found in this case, it may be through the main mass of latissimus dorsi.

Cases have been reported about this muscular anomaly during axillary dissection in cadavers and few cases were reported where this muscle was accidentally encountered during surgeries [2,7,9].

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The muscular arch when present causes difficulties in staging lymph nodes, axillary surgery, thoracic outlet syndrome, rarely shoulder instability or cosmetic problem can be a reason for axillary mass and can exert pressure on neighbouring neurovascular bundle and lymph routes [8]. Boonje described such a female patient aged 37 years, in whom the symptoms were not specific for any particular causes of obstruction of veins. Sachatello reported a similar case with intermittent obstruction of axillary vein [1].

It can cause confusion during routine axillary surgery for breast cancer. Its presence may impede the adequate exposure of true axillary fat and may limit access to the lower lateral group of lymph nodes, thus resulting in incomplete clearance of axilla [1,2].

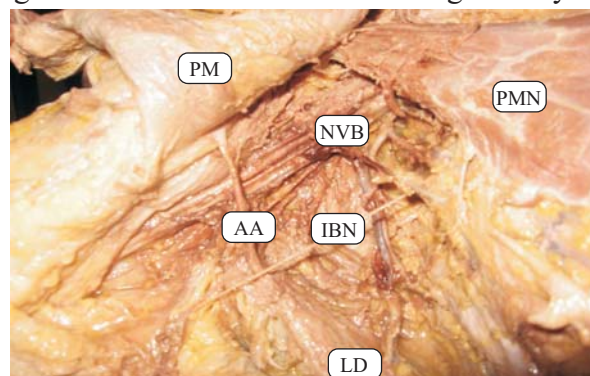
Access for bypass surgery using axillary vessels may be complicated if there is failure to identify Langer's arch. The axillary neurovascular bundle may be injured during axillary surgeries confusing the arch for the true lateral edge of latissimus dorsi. Ischaemic necrosis has complicated latissimus dorsi breast reconstruction when the thoraco-dorsal pedicle was stretched or compressed by an unsuspected axillary arch [1,2,9]. It can cause shoulder instability syndrome especially during abduction and lateral rotation of shoulder joint [8]. It can present as an axillary mass and can be confused with enlarged lymph nodes or soft tissue tumors [1].

Pre operative diagnosis of Langer's axillary arch is possible by symptoms of intermittent axillary vein obstruction which are non specific for any particular cause of obstruction, by phlebography, when there is loss of normal axillary concavity, when there is marked disparity between obvious visual fullness in the axilla and if there is difficulty in palpating axillary mass [2]. If such an arch is found during axillary lymphadenectomy, the lymph nodes posterior and lateral to the arch should be excised. Missing these nodes during axillary node dissection leads to recurrence in patients with melanoma and breast cancer and also inaccurate staging may affect diagnosis and treatment of breast cancer.

Conclusion

The muscular axillary arch of Langer though a variation, is not uncommon. It should be kept in mind in differential diagnosis of thoracic outlet syndrome and axillary masses. Knowledge of this muscular slip is essential while performing surgeries in the axillary region, whether for lymphadenectomy or for bypass surgeries.

Figure I Dissection of axilla showing axillary arch



PM- Pectoralis major, LD- Latissimus dorsi, AA- Axillary arch, NVB- Axillary neurovascular bundle, PMN- Pectoralis minor, IBN- Intercostobrachial nerve.

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Torsion of Appendices Epiploicae Masquerading as Ogilvie's Syndrome

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Abstract

Torsion of appendices epiploicae is an uncommon differential diagnosis of a patient presenting with acute abdominal pain and its presentation as a Ogilvie's syndrome or colonic ileus is even rare. The diagnosis requires a keen suspicion on the part of the attending surgeon. Preoperative computerized tomography (CT) may help in the diagnosis but the final diagnosis is established only on the operating table. Adding this pathology to the existing list of the causes of colonic ileus/Ogilvie's syndrome may give us a good insight into the understanding of the condition & improvise our management.

This is a case report of 60 year old lady who was referred to us with nonspecific abdominal pain, distention of abdomen and vomiting from orthopaedics department, where she was being planned for surgery for intertrochanteric fracture femur. All our investigations were equivocal and suggested a Ogilvie's syndrome like picture. A trial of neostigmine therapy was also given after excluding physical obstruction and the patient did not respond and the patient was operated upon and intraoperative finding of torsed epiploic appendage was found as the cause of her symptoms. The patient made a good post operative recovery following surgical excision of torsed epiploic appendages.

This case should give us another dimension of thought in the management of such cases and help improvise our management.

Key words: torsion, epiploic appendagitis, Ogilvie's syndrome

Case Report

A 60 year old lady was admitted in the orthopaedics dept for intertrochanteric fracture of left femur following a trivial fall. She was planned for the fixation of the fracture after preoperative work up. Two days before the planned orthopaedic surgery she developed distention of the abdomen and vomiting. The patient failed to pass stools and flatus and was in a great deal of discomfort for the same. On examination- bowel sounds were heard, there was no guarding or any signs of impending bowel perforation. Rectum was found empty on digital rectal examination. Blood investigations did not show any gross abnormality and electrolytes showed mild hypokalemia (K⁺3.3 mEq/l). Abdominal erect and supine radiographs were obtained which showed distended ascending, transverse and descending colon. An ultrasound of abdomen showed only dilated bowel loops. Based on the above investigations a diagnosis of

adynamic ileus/Ogilvie's syndrome was arrived at.

The patient was given a trial of conservative management with oral restriction of fluids and the flatus tube was passed. The fluid and electrolyte imbalances were corrected. All the major etiologies for the diagnosis were ruled out and it was concluded to be a case of idiopathic colonic ileus/Ogilvie's syndrome. The patient was also given a trial of neostigmine 2.5mg, for which she failed to respond. With continuing distention and no relief of symptoms a decision was taken to perform an exploratory laparotomy with an intent to perform a decompressive ceacostomy. The patient was taken up for the surgery and to our surprise the only significant pathology found were torsed and gangrenous appendices epiploicae - two in the sigmoid colon and another gangrenous fatty appendage in relation to the mesenteric border of the distal jejunum as seen in figure I and II. There was moderate distention of the ascending colon and

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the transverse colon. The gangrenous appendices epiploicae and the fatty appendage in the jejunal mesentery were clamped ligated and excised and were sent for the histopathological examination as shown in figure III.

The patient also underwent tube cecostomy. The postoperative period was uneventful with the return of bowel function and oral fluids were resumed on 4th post operative day. Patient recovered well. Cecostomy tube was removed on 15th post operative day. Histopathology showed inflammatory cells within and necrosis with thrombosed vessels.

Discussion

The epiploic appendices are small (0.5–5.0 cm long) pouches of peritoneum filled with fat and small vessels that protrude from the serosal surface of the colon. They occur in the rectosigmoid junction (57%), ileocecal region (26%), ascending colon (9%), transverse colon (6%) and descending colon (2%) . Occasionally they are found on the appendix or small bowel[1,2].

Epiploic appendagitis, denoting inflammation of an epiploicae appendix from any cause, may be primary or secondary. Primary epiploicae appendagitis is caused by torsion or spontaneous venous thrombosis of the involved epiploicae appendage. Secondary epiploicae appendagitis is associated with inflammation of adjacent organs, such as diverticulitis, appendicitis, or cholecystitis. Primary epiploicae appendagitis occurs in the second to fifth decades of life without sexual preponderance. Patients may present with localized abdominal pain of variable intensity and duration, rebound tenderness, an abdominal mass, mild fever, and mild leukocytosis. The nonspecific symptoms may mimic appendicitis, diverticulitis, omental infarction, pelvic inflammatory disease, or a ruptured ovarian cyst. Until the advent of sonography and CT, primary epiploicae appendagitis was rarely diagnosed correctly before surgery[3,4,5].

In the past, diagnosis of epiploic appendagitis was often the result of an unexpected finding during an exploratory laparotomy. Today this condition is usually diagnosed by ultrasound or CT,

with the latter more sensitive and specific. Although ultrasound has the advantage of correlating the location of the lesion with the location of maximum tenderness, CT should be used to confirm the fatty nature of the lesion before making a definite diagnosis of primary epiploic appendagitis. With the increasing use of CT for assessing cases of acute abdominal pain, the diagnosis of epiploic appendagitis is now more common. Diagnostic laparoscopy is now considered as a good diagnostic modality that offers an accurate assessment of this obscure pathology with the benefits of minimal risk and rapid recovery. In recent times, laparoscopic detection and treatment (by excision) has been reported from several centres [6,7,8,9].

This case gives us another rare but a definite cause of idiopathic pain abdomen, which a surgeon should keep in the long list of differential diagnosis. In view of the rarity of the entity, we could not diagnose it pre operatively. So this case should alert one to keep this diagnosis in mind whenever we deal with cases of this type. It also highlights the need for multi speciality approach to such patients, else it is impossible to handle such cases.

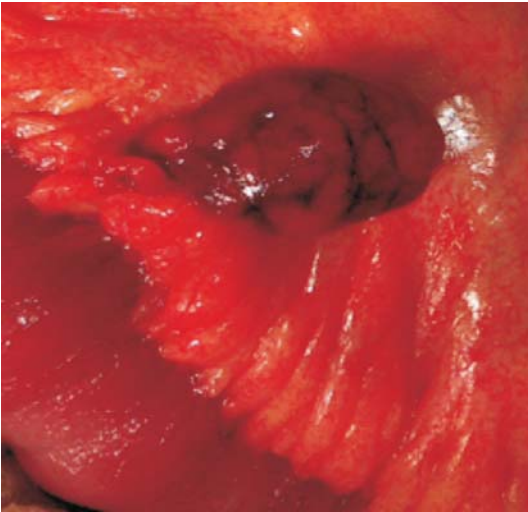


Figure I Torsion of epiploic appendage near jejunal mesentery



Figure II appendices epiploicae of sigmoid colon showing torsion



Figure III Excised specimen of appendices epiploicae

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Cancer-Pain.org [Internet]. New York: Association of Cancer Online Resources, Inc.; c2000-01 [updated 2002 May 16; cited 2002 Jul 9]. Available from: <http://www.cancer-pain.org/>.

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