

AN ASSESSMENT INTO THE DIAGNOSTIC VALUE OF ULTRASOUND IN THE FIRST TRIMESTER OF PREGNANCY BLEEDING

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Abstract

Background: One of the most prevalent obstetric issues is vaginal bleeding in the first trimester. It's also one of the most prevalent reasons for emergency admissions, as well as a reason for ultra-sound evaluation in the first trimester. In the first trimester, over a quarter of all pregnant female experience bleeding.

Aims and objective: The purpose of this research was to determine the diagnostic value of ultra-sonography in first-trimester haemorrhage.

Materials and method: All pregnant female who experienced per vaginal bleeding during the first trimester were included in this research. A semi-structured questionnaire was used to assess all of the selected instances. To arrive at a clinical opinion, a full history and comprehensive clinical evaluation were undertaken, including general, systemic, per abdominal, and per vaginal evaluations. In all of the cases that were chosen, ultra-sonography was used. The results of the clinical evaluation and ultra-sonography were documented.

Results: On clinical evaluation, 164 cases of threatened abortion were identified, whereas ultra-sonography verified 102 cases of impending abortion. In 62 cases, there was a discrepancy in opinion. Complete abortion had a 16 percent inconsistency, while incomplete abortion had a 4 percent inconsistency. In 20 cases of Blighted ovum, there was a inconsistency. Out of 214 occurrences of first trimester bleeding, abortion was diagnosed in 200 cases (93.46 percent), ectopic pregnancy in 10 cases (4.67 percent), and hydatiform mole in four cases (1.87 percent). Clinical opinion had a 100% sensitivity in diagnosing a viable intrauterine pregnancy, but only a 44.6 percent specificity. Clinical opinion has a poor statistical correlation in diagnosing nonviable pregnancies, with a sensitivity of 39%.

Conclusion: Ultra-sonography has thus been established as a critical diagnostic tool in obstetrics. It is a readily available diagnostic tool that aids in the early detection of problems associated with first-trimester haemorrhage. It was established in the aforementioned research that it had an essential role in the opinion of first trimester haemorrhage.

Key Word: first trimester bleeding, ultasonography, diagnostic importance

Introduction

One of the most prevalent obstetric issues is vaginal bleeding in the first trimester. It's also one of the most prevalent reasons for emergency admissions, as well as a reason for ultra-sound evaluation in the first trimester¹. In the first trimester, over a quarter of all pregnant female experience bleeding. Vaginal haemorrhage and mild-to-moderate supra-pubic or mid-line lower abdominal pain that may spread to the lower back are common symptoms²⁻⁴. The clinician should inquire about prior pregnancy confirmation, the last known menstrual period, when the bleeding started, the amount and nature of the bleeding, and current medications (ovulation agents put a woman at risk for a heterotopic pregnancy, which is an IUP and an EP simultaneously)⁵⁻⁷. A complete blood count, WBC count with differential to rule out infection, urinalysis to rule out urinary tract infection, gonorrhea/chlamydia swab, Rh-type, qualitative -hCG, transvaginal ultra-sound, quantitative -hCG, and serum progesterone levels are all

part of the diagnostic workup for a woman who presents with early pregnancy bleeding⁸⁻¹⁰. In early pregnancy bleeding, the TVUS and quantitative-hCG are currently considered first-line diagnostics¹¹. According to the data, TVUS is used to diagnose 91 percent of EPs, which is preferable to transabdominal ultra-sound because of its improved sensitivity. Ultra-sound (both trans-abdominal and transvaginal sonography) is used to diagnose the reasons of first-trimester bleeding, as well as to prognosticate and forecast the outcome of an abnormal pregnancy¹².

Materials and Method

The current one-year cross-sectional research was undertaken in the tertiary care institute's department of obstetrics and gynaecology with the goal of researching first trimester bleeding cases. The research subjects were chosen using the following inclusion and exclusion criteria.

All pregnant female who present with vaginal bleeding are eligible. The gestation period is less than 12 weeks. All causes of vaginal bleeding that aren't related to pregnancy are excluded. Patients who are pregnant and have vaginal bleeding with a gestational age of greater than 12 weeks. Female who refused to take part in the research?

Using the above-mentioned inclusion and exclusion criteria, a total of 214 female with first-trimester haemorrhage were enrolled in the research. The semistructured questionnaire had been pretested on a group of pregnant female who had first trimester

bleeding and met the research's eligibility requirements. The questionnaire was adjusted and verified for the full trial based on these findings. To arrive at a clinical opinion, a full history and a comprehensive clinical evaluation were undertaken, including general, systemic, per abdominal, and per vaginal evaluations. The patients were subsequently exposed to an ultra-sound evaluation, after which a specific treatment plan was devised. With a sector probe 3.75 MHz frequency transducer, a trans abdominal scan (TAS) was performed.

Results

Table 1: Distribution according to inconsistency between clinical opinion and ultra-sound opinion

Cases	Clinical opinion	Ultra-sonography	Opinion Inconsistency
Threatened-abortion (TA)	164 (76.6 %)	102 (47.7 %)	62
Complete-abortion (CA)	10 (4.7 %)	26 (12.2 %)	16
Incomplete-abortion (IA)	14 (6.5 %)	18 (8.4 %)	4
Inevitable-abortion (IEA)	8 (3.7 %)	10 (4.7 %)	2
Missed-abortion (MA)	8 (3.7 %)	24 (11.2 %)	16
Blighted ovum (BO)	0 (0.00 %)	20 (9.4 %)	20
Ectopic pregnancy (EP)	10 (4.7 %)	10 (4.7 %)	0
Complete mole (CM)	0 (0.00 %)	4 (1.9 %)	4

76.6 percent of female were diagnosed with clinically threatening abortion, whereas 6.5 percent were diagnosed with incomplete abortion. In 4.7 percent of instances, both complete abortion and ectopic pregnancy were discovered. On ultra-sonography, 47.6% of female were found to be at danger of having an abortion. 12.15 percent of female were diagnosed with a complete abortion, whereas 11.22 percent were diagnosed with a missed abortion. 8.41% of female were found to have

had an incomplete abortion. On clinical evaluation, 164 cases of threatened abortion were identified, whereas ultra-sonography verified 102 cases of impending abortion. In total, 62 occurrences of discrepancy were discovered. Complete abortion had a 16 percent inconsistency, while incomplete abortion had a 4 percent inconsistency. In 20 cases of Blighted ovum, there was a inconsistency.

Table 2: Causes of bleeding per vaginum in the first trimester of pregnancy

Causes	Number	Percentage
Abortion	200	93.5 %
Ectopic	10	4.7 %
Hydatidiform mole	4	1.9 %

Out of 214 cases of first trimester bleeding, abortion was identified in 93.5 percent of the cases, ectopic pregnancy

in 4.7 percent of the cases, and hydatiform mole in 1.9 percent of the cases.

Table 3: Diagnostic importance of clinical evaluation in first trimester bleeding

Parameters	True positive	False positive	False negative	True negative
Viable intrauterine pregnancy	102	62	0	50
Ectopic pregnancy	10	0	0	204
Nonviable intrauterine pregnancy	40	0	62	110

Table 4: Clinical opinion Vs Ultrasonography opinion

Clinical opinion	Number of cases	Ultrasonography opinion
TA	164	Pregnancy continued-102
		CA -16
		IA -4
		IEA -2
		MA -16
		BO -20
		CM-4
CA	10	All cases were confirmed on USG
IA	14	
IEA	8	
MA	8	
Ectopic	10	
CM	0	NA
BO	0	

Only 102 cases were continued as live pregnancies out of 164 cases clinically identified as threatened termination. The remaining 62 cases were clinically misdiagnosed, with 16 cases being identified as complete abortion, 16 cases being classified as missed abortion, and 20 cases being diagnosed as blighted ovum. In four cases, incompetent abortion and full mole were established, while two cases were of unavoidable abortion. Clinically, no case of blighted ovum or entire mole was found. On ultra-sonography, ten cases of clinically diagnosed ectopic pregnancy were confirmed as ectopic pregnancy.

Discussion

The purpose of this research was to investigate first trimester bleeding and connect clinical findings with Ultra-sonography in the department of obstetrics and gynaecology. Clinically threatening abortion was detected in 76.6 percent of the female, while incomplete abortion was detected in 6.5 percent of the female. In 3.7 percent of instances, both complete abortion and ectopic pregnancy were discovered¹³. On clinical evaluation, the most common finding was threatening abortion. All of the female in the research had their ultra-sounds done, and 47.7% of them had their threatened abortion confirmed. 12.15 percent of female were found to have had a complete abortion, whereas 11.22 percent were found to have had a missed abortion. 8.41% of female had an abortion that was not completed¹⁴. On ultra-sonography, Gawade S et al found that threatened abortion was the most common opinion (44 percent), followed by missed abortion (22 percent). In 12.7 percent of cases, blighted ovum was a new opinion that could not be diagnosed by clinical procedures. The results of this investigation were likewise similar to those found by Asha Hanamshetty et al, Mamatha Shivanagappa et al, and S. Sujatha et al in their studies. In their research, Gawade S et colleagues found that

86.67 percent of cases were clinically identified as threatening abortion, whereas only 50.77 percent of cases received a comparable opinion on ultra-sound, resulting in a 49.23 percent inconsistency¹⁵⁻¹⁷. In their research, Mamatha Shivanagappa et colleagues found that abortion was the leading cause of first trimester bleeding, accounting for 83 percent of cases. Ectopic pregnancy was reported to be 13 percent of the time, and mole was reported to be 4 percent of the time. Abortion was also the major reason in Rani et al's research, with a 61 percent incidence rate. For statistical purposes, the participants in the research group were classified into three categories: viable intrauterine pregnancy, non-viable intrauterine pregnancy, and ectopic pregnancy. Clinical opinion has a 100% sensitivity in diagnosing a viable intrauterine pregnancy, but only a 44.64 percent specificity. The accuracy of clinical opinion in diagnosing a viable intrauterine pregnancy was 71.028 percent¹⁸. All ectopic pregnancies detected clinically were verified with 100 percent sensitivity and specificity, as well as 100 percent diagnostic accuracy. Clinical opinion has a poor statistical correlation in diagnosing nonviable pregnancies, with a sensitivity of 39.22%, specificity of 100%, NPV of 64.36 percent, and accuracy of 71.028 percent. In their research, Mamatha Shivanagappa et al found that 46 out of 94 cases of suspected viable intrauterine gestation were verified on clinical evaluation, with a sensitivity of 82 percent, specificity of 52 percent, PPV of 40 percent, and NPV of 88 percent. All nine ectopic pregnancies detected clinically were confirmed, with a specificity of 100%, a PPV of 100%, and an NPV of 92%. Clinical opinion demonstrated a poor statistical correlation in diagnosing non-viable pregnancies, with sensitivity of 50%, specificity of 81 percent, PPV of 62 percent, and NPV of 72 percent. As a result, the findings were equivalent to those of the current research. Threatened abortion was clinically detected in 130 (86.67 percent) cases in a

research by Gawade S et al. Only 66 cases (50.77 percent) were confirmed as threatening abortions by ultra-sonography. Clinical diagnoses of ectopic pregnancy (2%), hydatiform mole (0.67%), and impending abortion with cervical polyp (0.67%) were all well-correlated with ultra-sound findings. In a prospective research of 150 patients with first trimester bleeding, Jaideep Maihotra et al discovered that ultra-sonography helped confirm the correct opinion in 32 percent of clinically misdiagnosed cases. He came to the conclusion that ultra-sonography was the only imaging technique that could accurately detect first trimester haemorrhage from a diagnostic and prognostic standpoint. Sofat and colleagues examined and linked clinical and ultra-sonography diagnoses. Ultra-sound was found to have a distinct advantage over clinical opinion. To summarise, the causes of bleeding in this research spanned a wide range of situations, from a viable pregnancy to a non-viable pregnancy. In cases of abortion, ultra-sound evaluation was a good predictor of evacuation. Pregnancy with a higher possibility of a live birth might be distinguished from a problematic pregnancy that required early termination using ultra-sound. The old belief was that nothing beats an obstetrician's two fingers, but ultra-sound has now been proven to have a distinct advantage. Ultra-sound is often referred to as the obstetrician's third finger.

Conclusion

As a result, we conclude that clinical evaluation is less accurate than ultra-sonography in detecting a viable intrauterine pregnancy. When compared to USG, clinical opinion had the same diagnostic accuracy in diagnosing ectopic pregnancies. Clinical opinion has a low accuracy rate when it comes to diagnosing nonviable pregnancies as compared to USG. Ultra-sonography has thus been established as a critical diagnostic tool in obstetrics. It is a readily available diagnostic tool that aids in the early detection of problems associated with first-trimester haemorrhage. It was established in the aforementioned research that it had an essential role in the opinion of first trimester haemorrhage.

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AN OBSERVATIONAL RESEARCH ON OBSTETRIC CHOLESTASIS AND ITS IMPACT ON FOETAL OUTCOME

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Abstract

Background: Obstetric cholestasis (OC) is a hepatic disease distinctive to pregnancy which is classified as dermatoses of pregnancy with an initial presentation of pruritus. OC is different compared to the other dermatoses of pregnancy such that there are no lesions or primary rash but there is, however, a propensity for maternal morbidity and a substantial risk of morbidity and mortality of fetus, also there are implications about health of offspring in future. Increased foetal serum bile-acids viz. taurocholic and taurodeoxycholic acid are likely associated to foetal complications of Intra-hepatic cholestasis of pregnancy (ICP). It has been known that women suffering from OC have abnormal hormonal metabolism, genetic predisposition, altered immunity and they are subjected to environmental influences.

Aims & Objectives: To research the impact of obstetric cholestasis on foetal outcome.

Material & Methods: Patients who showed clinical symptoms of pruritus which was unidentified with other etiology along with elevated hepatic enzymes and who were presented between 30 to 40 weeks of gestation were identified as having clinical Obstetric cholestasis while few patients were excluded as they had other chronic hepatic disease or dermatological disease or choledocholithiasis and some of them had acute fatty hepatic of pregnancy.

Results: It was found that 20(40%) patients among 50 cases had bile-acid levels $> 40 \mu\text{mol/l}$ while 30(60%) patients belonged to the group having bile-acid levels $< 40 \mu\text{mol/l}$. Among 20 cases in group 1, 18(90%) cases reported foetal complications which was very high compared to group 2 where among 30 cases only 4(13.3%) cases were found to have foetal complications. Among those 18 cases, majority of cases 10(55.6%) were observed to have respiratory distress followed by 4(22.2%) cases of low birth weight, 3(16.7%) cases with intrauterine foetal disease and 1(5.6%) still birth. While among 4 cases with bile-acid levels $< 40 \mu\text{mol/l}$, 3(75%) had respiratory distress followed by 25(%) low birth weight cases. There was no case of IFD as well as still birth in group 2.

Conclusion: Our research shows that there is a substantial risk of foetal morbidity and mortality in OC with clear consequences for the offspring's potential health. We also observed that in those with a higher bile-acid pool, most of the foetal complications occur. This indicates that bile-acid sensitivity can be used in OC as a predictive marker of foetal risk. This means that OC-affected pregnancies fall into the high-risk group and require foetal surveillance.

Keywords: obstetric cholestasis, foetal outcome, bile-acid levels, dermatoses, low birth weight

Introduction

Obstetric cholestasis (OC) is a hepatic disease distinctive to pregnancy which is classified as dermatoses of pregnancy with an initial presentation of pruritus. Due to the multifaceted and weakly understood etiology, pathology and physiology, intra-hepatic cholestasis of pregnancy has been classified as peculiar, complex and intriguing problem. OC is different compared to the other dermatoses of pregnancy such that there are no lesions or primary rash but there is, however, a propensity for maternal morbidity and a substantial risk of morbidity and mortality of fetus, also there are implications about health of offspring in future. The society of Medical-Foetal Medicine accord that obstetric cholestasis should be diagnosed when the total bile-acid levels or serum bile-acids are measured at $10 \mu\text{mol/l}$. OC, pruritus gravidarum and recurrent

idiopathic jaundice has also been referred as Intra-hepatic cholestasis of pregnancy. Jaundice, dysuria, pruritus, excoriations from scratching and steatorrhea are the clinical features of this disease¹. The oral contraceptive pills which contains estrogen or only intake of estrogen is known to cause cholestasis which is due to inhibition of hepatocellular bile salt export pump. Increased foetal serum bile-acids viz. taurocholic and taurodeoxycholic acid are likely associated to foetal complications of Intra-hepatic cholestasis of pregnancy (ICP). It has been known that women suffering from OC have abnormal hormonal metabolism, genetic predisposition, altered immunity and they are subjected to environmental influences²⁻⁵. Meconium staining of amniotic fluid (MSAF) is considered to be an indication of foetal discomfort. In the normal term pregnancies the

incidence of MSAF is 15%. It has also been noted that about 16% to 58% of cases of ICP has MSAF and upto 100% cases are affected by intrauterine death^{6,7}. ICP is reported to have associated with intrapartum as well as antepartum cardio-tocographic abnormalities including decreased variability of foetal heart rate, tachycardia, decelerations and bradycardia⁸. There is an elevated risk of spontaneous preterm labour is present., which in some studies has been recorded in as many as 60 % of dehepatities, but in ICP cases without active management, most studies report rates of 30 to 40%. In ICP pregnancies with maternal fasting serum bile-acid >40 $\mu\text{mol/l}$, the frequency of this complication was substantially higher. For either labour induction or elective caesarean section at 37 weeks 'gestation, there is an increased risk of respiratory distress syndrome. It occurs in around 22- 33% of patients⁹⁻¹². In conjunction with the disease, there are clear records of adverse foetal outcomes. Many experiments have attempted to associate the biochemistry of maternal serum with foetal outcomes. In more recent research using active management policies, perinatal mortality in OC was reduced to 3.5% or less. Many different clinical strategies, including improved foetal management, can include the term active management. Monitoring, regular biochemical monitoring, ursodeoxycholic acid (UDCA) pharmacotherapy, or dehepatity at 37 to 38 weeks gestation. These protocols of management are based on data showing that ICP stillbirths appear to cluster about 37-39 weeks¹³⁻¹⁷. Management: UDCA has been shown to have greater effectiveness in maternal pruritus and to enhance maternal pruritus than other treatment modalities, including the use of S-adenosyl-L-methionine, dexamethasone, cholestyramine and guar gum Serum transaminase and TBA levels¹⁸. A correlation between ICP and foetal growth has been seen in several studies, but the findings are inconsistent. A major, population-based longitudinal research recorded

a substantial increase in the incidence of broad gestational age (LGA) infants after control for diabetes and preeclampsia in pregnancies complicated by ICP¹⁹.

Material and Methods:

This research was done in the Tertiary healthcare Centre. Patients who showed clinical symptoms of pruritus which was unidentified with other etiology along with elevated hepatic enzymes and who was presented between 30 to 40 weeks of gestation were identified as having clinical Obstetric cholestasis. A total of 80 patients having itching were studied among which 50 were included in this research. Those 50 were clinically diagnosed with OC and 30 patients were excluded as they had other chronic hepatic disease or dermatological disease or choledocholithiasis and some of them had acute fatty hepatic of pregnancy. Examination details and history of patients was noted along with all investigations necessary for ANC especially bile-acid levels, non-stress test, hepatic function test and ultrasound. Pruritus coinciding with hepatic dysfunction and/or raised serum bile-acid levels > 10 $\mu\text{mol/l}$ has been used as the criteria for diagnosing OC. The research patients have been classified into two groups categorized as below:

Group 1: Total bile-acid (TBA) levels > 40 $\mu\text{mol/l}$

Group 2: Total bile-acid (TBA) levels < 40 $\mu\text{mol/l}$

Babies weighing < 2.5 kg were considered as low birth weight babies. Any neonate who required continuous positive pressure of air, intubation, postpartum mask or bag ventilation, documentation of respiratory distress secondary to meconium aspiration, diagnosed for pneumonia was defined as respiratory distress.

Results:

Table 1: Foetal complications in ICP patients

Foetal complications in ICP patients	Number	Percentage
Present	20	40%
Absent	30	60%
Total	50	100%

It was observed that among 50 cases included in research, 20(40%) cases had foetal complications while foetal complication did not occur in 30(60%) cases.

Table 2: Distribution of foetal complications in classification of ICP patients according to total bile-acid (TBA) levels

Bile acid level	Number	Percentage
>40 micromol/l	20	40%
<40 micromol/l	30	60%
Total	50	100%

It was found that 20(40%) patients among 50 cases had bile-acid levels > 40 $\mu\text{mol/l}$ while 30(60%) patients belonged to the group having bile-acid levels < 40 $\mu\text{mol/l}$.

Table 3: Distribution of foetal complications according to bile-acid levels.

Foetal complication	Group 1	Group 2
Intrauterine foetal death	3 (16.7%)	0(0%)
Low birth weight	4 (22.2%)	1 (25%)
Still birth	1 (5.6%)	0 (0%)
Respiratory distress	10 (55.6%)	3 (75%)

Among 20 cases in group 1, 18(90%) cases reported foetal complications which were very high compared to group 2 where among 30 cases only 4(13.3%) cases were found to have foetal complications. Among those 18 cases, majority of cases 10(55.6%) were observed to have respiratory distress followed by 4(22.2%) cases of low birth weight, 3(16.7%) cases with intrauterine foetal disease and 1(5.6%) still birth. While among 4 cases with bile-acid levels less than 40 $\mu\text{mol/l}$, 3(75%) had respiratory distress followed by 25% low birth weight cases. There was no case of IFD as well as still birth in group 2.

Discussion:

While OC is typically relatively benign to the mother, in pregnancies affected by OC, the risk of foetal abnormalities is known to be increased. These include elevated respiratory distress risks, amniotic fluid stained with meconium, low birth weight, stillbirth, and IUFD. Although ICP for mothers is a relatively non-threatening disease, there are significant risks to the foetus. It is associated with a higher risk of foetal death, amniotic fluid meconium staining, foetal distress and preterm birth^{20,21}. In present research, foetal complications were observed in 20(40%) cases where as foetal complications were absent in 30(60%) cases among 50 cases included in the research. Also, 30(60%) cases had bile-acid levels $<40 \mu\text{mol/l}$ and rest 20(40%) cases had bile-acid levels $>40 \mu\text{mol/l}$. Majority of the foetal complications in our research were observed in the cases having higher bile-acid levels ($>40 \mu\text{mol/l}$) compared to those with lower bile-acid levels ($<40 \mu\text{mol/l}$) which means that higher serum levels of bile-acid are associated with higher perinatal morbidity and mortality rates. The findings in our research are in agreement with a research done by Posh S et. al who showed that pregnancies complicated by meconium-stained liquor, cardiotocography anomalies, and foetal asphyxial events are more likely in ICP cases with higher maternal serum bile-acid levels ($>40 \mu\text{mol/l}$)²². A research done by Li et. al. showed that in ICP pregnancies, neonatal birth weight is lower than in normal pregnancies which is in agreement with present research²³. In present research, 3(75%) among 4 cases of foetal complications had respiratory distress in group 2 while in group 1, 10(55.6%) among 18 cases were having respiratory distress. Zecca has recorded that in neonates born to mothers with ICP, the rate of respiratory distress syndrome is double that of the general population. This

may be due in part to the earlier gestational age at birth, but on the basis of an examination of Broncho alveolar lavage fluid of neonates born to mothers with ICP, neonatal respiratory distress syndrome has been shown to be correlated with ICP²⁴.

Conclusion:

Our research shows that there is a substantial risk of foetal morbidity and mortality in OC with clear consequences for the offspring's potential health. We also observed that in those with a higher bile-acid pool, most of the foetal complications occur. This indicates that bile-acid sensitivity can be used in OC as a predictive marker of foetal risk. This means that OC-affected pregnancies fall into the high-risk group and require foetal surveillance.

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Drug Utilization of Antimicrobial Agents in patients of Pelvic Inflammatory Disease attending Obstetrics & Gynaecology Department in a Tertiary Care Hospital

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ABSTRACT

Introduction: Pelvic inflammatory disease (PID) is a major health concern leading to profound gynecological morbidity among women in reproductive age group. Therefore, this study was undertaken to analyze the prescription pattern of Antimicrobial Agents in patients suffering from Pelvic Inflammatory Diseases.

Methodology: A cross-sectional study was conducted at the Department of Gynecology & Obstetrics of Adani Institute of Medical Science, Bhuj, Gujrat. A total of 442 prescriptions of clinically diagnosed PID cases from Outpatient Department (OPD) and Inpatient Department (IPD) were collected and analyzed in the department of Pharmacology on the basis of Drug utilization WHO indicators.

Results: Average number of AMAs per prescription was 2.0. Majority of patients were prescribed Antifungals (n=237, P=25.90%) followed by Nitroimidazoles (n=184, P=20.10%), Fluoroquinolones (n=182, P=19.89%), Doxycycline (n=166, P=18.14%), and least prescribed was Aminoglycoside and Urinary antiseptics (n=4, P=4.04%).

Conclusion: There was minimal difference between defined recommendations in standard treatment guidelines and the clinical use of antimicrobial agents. The only lacking part of this study was lesser use of generic drugs.

Keywords: Drug Utilization of Antimicrobial Agents

INTRODUCTION

Diabetes mellitus (DM) is one of the most common metabolic disorders associated with chronic complications such as nephropathy, angiopathy, retinopathy, autonomic neuropathy, and peripheral neuropathy.^[1] These complications result from a complex interaction of direct and indirect metabolic consequences of insulin deficiency and


additional genetic and environmental factors.^[2]

Involvement of peripheral and autonomic nervous systems frequently encounters in DM. However, there is a paucity of data regarding central neuropathy in DM. Neurochemical, electrophysiological, structural and neurobehavioral levels have demonstrated manifestations of DM-2 cerebral disorders. Probably alterations in cerebral blood supply and metabolic derangements play a role, as they do in the pathogenesis of DM-2 neuropathy. Furthermore, recurrent episodes of hypoglycemia and poor metabolic control also affect the brain.^[1]

Some reports claim central neuropathy in DM based on evoked potentials. However, central neuropathy in DM particularly before symptomatic peripheral neuropathy has received much less attention.

Electrophysiological tests for diagnosing disorders of peripheral nervous system include nerve conduction studies (NCS), and electromyography.^[3] EEG measures electrical activity of the brain and is a noninvasive tool with excellent temporal resolution and quite useful as a prognostic tool in disorders of the central nervous system (CNS).^[1]

Our aim is to study the central and peripheral neuropathy by

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EEG and NCS respectively in DM-2 before symptomatic peripheral neuropathy. Hence, we believe that this study sheds light on the central and peripheral neuropathy in DM-2 before they show symptoms of peripheral neuropathy.

MATERIALS AND METHODS

This prospective study was done by Department of Gynecology & Obstetrics of Adani Institute of Medical Science, Bhuj, Gujrat. The female patients aged 15-60 years suffering from Pelvic Inflammatory disease attending Obs/Gynecology department were enrolled who were on antimicrobials and satisfy the inclusion and exclusion criteria.

The study was conducted for a period of 12 months from Feb 2013 – Jan 2014 on clinically diagnosed (both acute and chronic) PID patients aged 15-60 years.

Data from Gynaecology & Obstetrics department both OPD and IPD were gathered randomly twice weekly and the detailed records of demographic, clinical features & treatment instructions were noted in 'Case Record Form' after getting explained consent from the patients.

Study was approved from Institutional Ethical Committee.

Rationality

A. The therapy was considered rational if the antimicrobial use and its route of administration, dose, frequency and duration of use were considered appropriate for infection.

B. Therapy was considered irrational if the antimicrobial was used without indication, prophylaxis under circumstances of unproven efficacy or by clearly inappropriate route, dose or preparation for that indication.

It is a prospective study and is based on medication utilization form, which has been designed on the basis of a WHO format.

WHO CORE INDICATORS

Data will be further analyzed as under:

1. Age and sex wise distribution.
2. Average number of drugs per encounter.
3. Prescribing Percentage of encounters with an antibiotic prescribed.
4. Percentage of encounters with an injection prescribed.
5. Percentage of drugs prescribed by generic name.
6. Percentage of drug prescribed from Essential drug list formulary

RESULTS

A total of 442 prescriptions were analyzed during the 12 months study period. The maximum numbers of female

patients suffering from Chronic PID were from the age group of 21-40 years (n=235), and least of the patients fall under age group of 61-80 yrs. (n=45) (Table-1).

The total no. of drugs which were prescribed to the patient was 1175. Each patient on an average was prescribed 2.6 drugs per prescription. Out of 1175 of total drugs, 915 were antibiotics.

During the study, it was observed that the most commonly prescribed Antimicrobial agents were Antifungals (n=237, P=25.90%) followed by Nitroimidazoles (n=184, P=20.10%), Fluoroquinolones (n=182, P=19.89%), Doxycyclines (n=166, P=18.14%), and Aminoglycosides. Urinary antiseptics were the least prescribed class (n=4, P=4.04%). Individually, most commonly used agents of these is Doxycycline, Clotrimazole + Tinidazole followed by Metronidazole, combination of Ofloxacin + Ornidazole, Fluconazole + Ornidazole and least prescribed was Nitrofurantoin (Table-2).

In the concomitant medications, Proton Pump Inhibitors were mostly prescribed (n=118, P=45.38%) followed by NSAIDs (n=75, P=28.84%), Sedatives were the least prescribed class (n=67, P=25.76%). (Table- 3)

Out of Total 915 antibiotics prescribed all antibiotics were given orally, no parenteral administration. There was a high prevalence of empiric treatment with orally administered antibiotics in this study. The average no. of Antibacterial agents prescribed per patient per course was found to be 2.0. It was observed that out of 915 drugs which were prescribed to the patient none of drugs were in generic form. All drugs were prescribed from Essential Drug List. (Table-4)

DISCUSSION

Our objective was to study the central and peripheral neuropathy by EEG and NCS respectively in DM-2 before they show the symptoms of peripheral neuropathy. Both the groups were comparable in terms of their age, weight, height, BMI, and all the cardio-respiratory variables. The FBG, PPBG, and HbA_{1c} % of DM-2 were suggestive of confirmed diabetes and FBG was normal in all the controls. DM-2 had no clinical evidence of sensory neuropathy. The latencies, conduction velocities, and amplitudes of their bilateral sural SNAPs were above the normal cut-off values of $\geq 4 \mu\text{V}$. The latencies and conduction velocities of bilateral sural SNAPs in DM-2 were comparable with that in the controls. However, the amplitudes of bilateral sural SNAPs were low in DM-2 in comparison to the controls. Reduced amplitude is the primary abnormality associated with axonal loss. Comparing the amplitude of a potential with a normal control value is one of the best way to assess the amount of axonal loss. The typical pattern associated with axonal loss is one of reduced amplitudes with preserved latencies and conduction velocities. Sensory amplitudes often are low in demyelinating lesions. Reduced sensory amplitudes result from the normal processes of temporal dispersion and phase cancellation.^[5] EEG power spectra of delta activity were more in DM-2 at most sites as compared to controls during both the eyes-close and eyes-open conditions. Our results are in the line of the result of

Moradian et al^[6] who found DM-2 tended to have slower delta EEG power bands at all three recording sites Fz, Cz, and Pz during eyes-close and eyes-open conditions. Nevertheless, in their study they recorded the EEG activity from Fz, Cz, and Pz locations only. In our study, slowing (increased power of delta activity) was more in DM-2 at multiple sites during both the eyes-close and eyes-open conditions. Daniel et al^[7] found that hyperglycemia (blood glucose >15 mmol/dl) was associated with slowing of all cognitive performance tests and an increased number of mental subtraction errors for DM.^[7] Thus, our results are indicative of diffuse central neuropathy in DM-2 as indicated by EEG changes.

A meta-analysis of 24 studies showed that depression was associated with hyperglycemia in both type 1 diabetes mellitus (DM-1) and DM-2.^[8] In a prospective population-based similar study of 2764 Japanese men, those with major depressive disorder (MDD) or depressive symptoms were at a higher risk of developing DM-2.^[9]

In our study, we did not assess cognitive functions and depressive symptoms of the patients. However, the patients with DM are twice as likely to have depression^[10, 11] that will also negatively affect cognitive function and daily activities. DM-2 also has an increased incidence of Alzheimer's disease^[12-14] and increased incidence of vascular dementia.^[15, 16] This might be one of the reasons for increased delta activity in DM-2 in our study. *EEG power spectra of beta activity* were more in DM-2 as compared to controls during both the eyes-close and eyes-open conditions at all sites. Our results are in the line of the result of Gibbs et al^[17] who found mixed slow and fast frequencies and some intermingled spiking in patients with elevated blood sugar levels.^[17] Beta waves (>13/sec) are usually seen, especially on the frontal and central areas, in tense and anxious patients.^[18] Anxiety disorders are also highly prevalent in DM-2.^[19] The prevalence of anxiety and depression symptoms in DM was more than double the general population estimates.^[20] Khan et al^[21] in their study, done in 889 DM-2, identified that 57.9% had anxiety and 43.5% were positive for depression.^[21] Peyrot and Rubin^[22] studied 634 patients in an outpatient DM education program and reported depression and anxiety in 41.3% and 49.2% of the patients respectively. They concluded that DM is associated with an increased risk of psychological disturbance, particularly those with more DM-2-related complications.^[22]

EEG power spectra of alpha2 activity was more in DM-2 during eyes-open condition at Fz, Cz, Pz, C4, T4, P4, Fp1, F7, and T3. Increased alpha2 power activity contradicts the increase in faster activities. However, to explore our observations, further study is required. Alpha rhythm is the classical EEG correlate for a state of relaxed wakefulness best obtained with the eyes closed. Eye opening, other afferent stimuli, and mental activities temporarily block the posterior alpha rhythm.^[23] Occasionally, an increase in abundance of alpha activity occurs with eyes-open instead of decrease. This reversal is a "paradoxical effect" or "paradoxical alpha", which occurs mostly with eyes-open in

response to stimulation following a brief period of drowsiness.^[24]

EEG power spectra of alpha1 activity were more in DM-2 at Fz during eyes-close condition and at Fp2, F8, and T4 during eyes-open condition.

Our results are in the line of the result of Duffy et al^[25] who suggested that the bilateral slowing of the alpha rhythm might be seen in metabolic, toxic, and infectious encephalopathy of diverse etiology.^[24] It is also a consistent finding in patients with dementia irrespective of the underlying cause. The degree of slowing often parallels alteration in the mental status of the patient.^[25]

DISCUSSION

Antibiotics were once considered 'miracle drugs' and have been used for decades to effectively treat a variety of bacterial infections. Unfortunately, widespread use and misuse worldwide have led to the emergence of 'super bugs' and other drug-resistant bacteria.

Unnecessary use of antibiotics has also given rise to an increased risk of side effects, high costs and effects requiring medical attention.

Quality of life can be improved by enhancing standards of medical treatment at all levels of the health care delivery system. Setting standards and assessing the quality of care through performance review should become part of everyday clinical practice. The study of prescribing patterns seeks to monitor, evaluate and suggest modifications in practitioners' prescribing habits so as to make medical care rational and cost effective.

In our Study, the most commonly prescribed Antimicrobial agents were Antifungals (n=237, P=25.90%) followed by Nitroimidazoles (n=184, P=20.10%), Fluoroquinolones (n=182, P=19.89%), Doxycyclines (n=166, P=18.14%), Aminoglycoside. Urinary antiseptics were the least prescribed class (n=4, P=4.04%). Individually, most commonly used agents of these is Doxycycline, Clotrimazole + Tinidazole followed by Metronidazole, combination of Ofloxacin + Ornidazole, Fluconazole + Ornidazole and least prescribed was Nitrofurantoin (Table-2). In the concomitant medications Proton pump inhibitor drugs were mostly prescribed followed by NSAIDs. These findings are similar to study conducted by Sharma S et al, 2013 (8), whereas our results contradicts the study conducted by Basu J et al. 2015 where number of antimicrobials prescribed was 3.0 (9).

In the current study it was found that Gentamicin was prescribed more in comparison to Amikacin in patients requiring hospitalization with suspected or proven urinary tract infection. As previous study showed good results by Saini et al, where the researchers found good response to gentamicin to provide coverage against gram negative aerobic bacilli (10).

Use of Doxycycline with metronidazole was higher in our study to provide coverage against Chlamydia trachomatis and anaerobes, respectively as recommended by Saini et al recommended doxycycline against C. trachomatis in their study (10).

The findings of this study suggest that there was minimal difference between defined recommendations in standard treatment guidelines and the clinical use of antimicrobial agents. Establishing an appropriate and restrictive guide for antibiotic was therefore be a high aim and priority to this hospital.

CONCLUSION

The present study concludes that: treatment approach was empirical without objective criteria of infection and most of these drugs were prescribed using brand names.

All antibiotics were administered orally and parenteral administration never occurred. This may be reflective of an improvement in this aspect of prescribing pattern as opposed to previous excessive use of injections by some physicians who hold the erroneous belief that injections are more effective and offer better patient satisfaction. The other positive aspect of this study was average no. of antibiotics prescribed per prescription is lesser than other studies. This minimizes the habit of polypharmacy and drug-drug interactions.

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RATIO OF THE FETAL UMBILICAL ARTERIAL BLOOD VESSEL TO THE MIDDLE CEREBRAL ARTERIAL BLOOD VESSEL AS A PREDICTOR OF BAD PERI-NATAL CONSEQUENCE IN HIGH-RISK PREGNANCIES

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Abstract

Background: The utero-placental blood-flow and fetal responses to physiologic stressors can be determined by measuring blood-flow velocities in maternal and fetal arteries. In at-risk pregnancies, Doppler examinations of the umbilical arterial blood vessel and fetal middle cerebral arterial blood vessel are particularly effective for monitoring fetuses with early-onset growth restriction and fetal anaemia.

Aim: To determine the function of these blood-flow indicators in the prediction of adverse fetal consequence in high-risk pregnancies, researchers looked examined the ratio of middle cerebral to umbilical arterial blood vessel blood velocity.

Material and Methods: A total of 400 full-term pregnant women were enrolled in the research. For high-risk pregnancies, Doppler velocity waveforms of the umbilical and middle cerebral arteries were collected. The severity of abnormal perinatal consequences was assessed and associated.

Results: A high MCA/UC PI ratio was linked to poor peri-natal consequences such as thick meconium stained liquor, Apgar 7 at 5 minutes, respiratory difficulties within 72 hours, NICU admission within 72 hours, and small for age.

Conclusion: An abnormal MCA/UC PI and RI ratio was discovered to be linked to a poor peri-natal consequence. In high-risk pregnancies, aberrant Doppler velocimetry indices are a good predictor of poor peri-natal consequences.

Key Word: middle cerebral arterial blood vessel, Doppler velocimetry, peri-natal consequence

Introduction

Pre-eclampsia is the leading cause of maternal and neonatal morbidity and mortality, despite recent breakthroughs in ante-natal treatment¹. As a result, early detection of Pre-eclampsia and fetal growth restriction may allow for more diligent ante-natal observation and timely fetal delivery to avoid significant consequences. It has long been considered that anomalies in the uterine, placental, and fetal circulations cause poor pregnancy consequences, and that these abnormalities can be detected by Doppler ultrasonography^{2,3}. The utero-placental blood-flow and fetal responses to physiologic stressors can be determined by measuring blood-flow velocities in maternal and fetal arteries. Pre-eclampsia causes progressive hemodynamic alterations in the fetoplacental circulation due to abnormal placental vascular development. When 60 to 70% of the placental vascular tree is compromised, Doppler indices from the umbilical arterial blood vessel rise; finally, fetal middle cerebral arterial blood vessel impedance declines and fetal aortic resistance rises, directing blood to the fetal brain and heart⁴. End diastolic flow in the umbilical arterial blood vessel eventually stops or reverses, and fetal venous resistance rises (ductus venosus, inferior vena cava)^{5,6}. The umbilical arterial blood vessel is a blood vessel that runs

through the abdomen. Early-onset growth restriction owing to utero-placental insufficiency makes Doppler examinations particularly effective for monitoring fetuses⁷. The best tool for monitoring for fetal anaemia in at-risk pregnancies, such as those affected by Rhesus alloimmunization, is Doppler examination of the fetal middle cerebral arterial blood vessel-peak systolic velocity⁸.

Aims & objectives: With this background, the goal of this research was to look at the ratio of middle cerebral to umbilical arterial blood vessel blood velocity in high-risk pregnancies to see if these blood-flow indices may help predict poor fetal consequences.

MATERIAL AND METHODS

Over the course of two years, an observational descriptive follow-up research was undertaken at the Department of Radio Diagnosis and Imaging of a tertiary care hospital. The research was carried out on pregnant women who were nearing the end of their pregnancy. The umbilical and middle cerebral arteries of all pregnant women were measured using Doppler velocimetry.

Sample size: A sample size of 400 cases with high-risk pregnancy who met the eligibility criteria was chosen based on practicality and research time.

Sampling technique: The research covered all cases identified with a high-risk pregnancy and meeting the inclusion and exclusion criteria in the Department of Obstetrics and Gynecology's outpatient clinic and then referred to the radiology department for Doppler. This process was repeated until the necessary sample size of 400 instances was reached.

Inclusion criteria: Women who are fully pregnant, Pregnancy length is well recorded, Singleton pregnancy is common, and gestational age is greater than 30 weeks.

High risk factors considered were - Pre-eclampsia, intrauterine growth restriction, gestational diabetes, anaemia, previous Caesarean section, poor obstetric history, Rh isoimmunization, and twin pregnancy are all risk factors.

Exclusion criteria: Preterm labour was a threat, as were incorrect dates, a foetus with a congenital abnormality, and intrauterine mortality at the time of Doppler. Abnormal Peri-natal Consequence & Reluctance to Participate

When any one or more of the following factors are present, the peri-natal result is termed abnormal: Perinatal death is a term used to describe the death of a person who Apgar 7 at 5 minutes, thick meconium coloured liquid Within 72 hours of delivery, there were respiratory difficulties and NICU admission. For high-risk pregnancies, Doppler velocity waveforms of the umbilical and middle cerebral arteries were collected. The Doppler investigation was conducted using a colour Doppler ultrasound machine (LOGIC 400 PROGE series) with a 3.75 MHz transducer. The patient was examined in a semi-recumbent position with a lateral tilt throughout the procedure. The Doppler transducer was carefully placed on the abdomen wall over the uterus and adjusted until Doppler signals specific to those vessels were discovered. All of the tests were carried out only when the foetus was apnoeic or inactive.

With blood-flow velocity waveforms of equal shape and amplitude and adequate quality, the signal was captured for a minimum of 5 to 8 cycles. The image was then frozen and measurements taken.

Ethical consideration: After the case was determined to be eligible for the research, she was informed about the procedure. Each patient was informed about the research's

potential risks and benefits. The patient was also advised of his or her right to withdraw from the research at any moment. She was also told that the hospital would provide her with the same level of treatment even if she declined to participate in the research. Following that, a written consent in vernacular language was obtained. Consent was obtained in the presence of a witness in the case of illiterate patients. All of the information gathered from the patients, as well as the clinical findings, was kept strictly confidential. At the time of writing the results, every precaution was made to avoid identifying particular cases. The data was presented as a whole rather than as a single case.

Statistical Analysis: All of the data gathered from the patients was entered into a computer programme called Microsoft Excel. Epi-info software was used to analyse the data. All qualitative data was reported as a percentage and frequency. The average and standard deviation were used to present all quantitative data. The Chi-square test is used to determine if there is a statistical relationship between two qualitative variables. At the 95 percent confidence interval, a P value of 0.05 was declared statistically significant.

RESULTS

The Systolic/Diastolic ratio (S/D ratio), pulsatility index (PI), and resistance index (RI) of the umbilical arterial blood vessel and middle cerebral arteries were studied in 400 high-risk mothers. 338 (84.5%) of the 400 mothers were under the age of 30, while the remaining 62 (15.5%) were over the age of 30. 174 (43.5%) of the women were primi gravida, while 226 (56.5%) were multi gravida. Out of 400 moms, 308 (77.0%) had full-term babies, with the remaining 92 (23%) having preterm babies. The average S/D ratio for Umbilical Arterial blood vessel was 2.5, the average Pulsatility Index was 0.6, and the average Resistance Index was 0.6. The average S/D ratio for the Middle Cerebral Arterial blood vessel (MCA) was 5.9, the average Pulsatility Index was 1.4, and the average Resistance Index was 0.7. The average Pulsatility Index for MCA/UC was 0.9, and the average Resistance Index was 1.12. In the case of the umbilical arterial blood vessel, aberrant S/D ratio was identified in 80 cases (20%), abnormal Pulsatility Index in 106 (26.5%), and abnormal Resistance Index in 116. (29 percent).

Table 1: Normal and Abnormal Doppler variables for Ratio of MCA / UA

Doppler variables	Ratio of MCA / UA			
	Normal	%	Abnormal	%
Pulsatility Index	314	78.5	86	21.5
Resistance Index	296	74.0	104	26.0

The Doppler variables of the Middle Cerebral Arterial blood vessel are shown in Table 2 as abnormal and normal. In the Middle Cerebral Arterial blood vessel, abnormal S/D ratio was discovered in 56 instances (14%), abnormal Pulsatility Index

in 16, and abnormal Resistance Index in 22 cases (5.5 percent). In the MCA/UA Ratio, abnormal Pulsatility Index was identified in 86 (21.5%) cases and abnormal Resistance Index in 104 cases (26 percent).

Table 2: Peri-natal consequence according to Ratio of MCA/UC PI

Peri-natal Consequence	Ratio of MCA/UC PI				P value
	Normal	%	Abnormal	%	
Total subject (n)	314	100	86	100	-
Adverse peri-natal consequence	20	6.4	86	99.3	<0.01*
Thick meconium stained liquor	6	1.9	74	85.5	<0.01*
Apgar < 7 at 5 minutes	6	1.9	48	55.4	<0.01*
Respiratory complications within	20	6.4	60	69.3	<0.01*
NICU admission within 72 hours of birth	20	6.4	60	69.3	<0.01*
Perinatal death	0	0.0	6	6.9	-
Small for age	114	36.4	54	62.4	<0.01*

Table 3 demonstrates the peri-natal consequence based on the MCA/UC PI ratio. A high MCA/UC PI ratio was linked to poor peri-natal consequences such as thick meconium stained liquor, Apgar 7 at 5 minutes, respiratory difficulties within 72 hours, NICU admission within 72 hours, and small for age.

Table 3: Peri-natal consequence according to Ratio of MCA/UC RI

Peri-natal Consequence	Ratio of MCA/UC PI				P value
	Normal	%	Abnormal	%	
Total subject (n)	296	100	104	100	-
Adverse peri-natal consequence	26	8.8	80	76.9	<0.01*
Thick meconium stained liquor	6	2	74	71.2	<0.01*
Apgar < 7 at 5 minutes	0	0	54	51.9	<0.01*
Respiratory complications within	26	8.8	54	51.9	<0.01*
NICU admission within 72 hours of birth	20	6.8	60	57.7	<0.01*
Perinatal death	0	0	6	5.8	-
Small for age	114	38.5	54	51.9	<0.09

Table 4 demonstrates the peri-natal consequence based on the MCA/UC RI ratio. An abnormal MCA/UC RI ratio was linked to poor peri-natal consequences such as thick meconium stained liquor, Apgar 7 at 5 minutes, respiratory difficulties within 72 hours, NICU admission within 72 hours, and small for age.

DISCUSSION

Doppler velocimetry was first used in obstetrics to provide a non-invasive averages of measuring utero-placental and fetal circulation. The umbilical arterial blood vessel is a blood vessel that runs through the abdomen. The use of Doppler velocimetry as a way of monitoring fetal compromise was initially investigated^{9,10}. However, more and more attention is being paid to changes in the fetus's circulation as a averages of determining additional changes that could indicate intrauterine impairment. Changes in circulation occurred before the onset of hypoxia, according to studies of the association between Doppler of the umbilical arteries and gases in umbilical venous blood¹¹. These diversifications are likely to be slight in the early stages, making single arterial blood vessel Doppler velocimetry less likely to detect them¹². As a result, many attempts have been undertaken to examine different

vessels in order to better the identification of the impaired foetus. The average S/D ratio for the Umbilical Arterial blood vessel was 2.5, the average Pulsatility Index was 0.6, and the average Resistance Index was 0.6 in this research. The average S/D ratio for the Middle Cerebral Arterial blood vessel (MCA) was 5.9, the average Pulsatility Index was 1.4, and the average Resistance Index was 0.7. The average Pulsatility Index for the MCA/UC ratio was 0.9, and the average Resistance Index was 1.12. The average S/D ratio, Pulsatility Index, and Resistance Index for Umbilical Arterial blood vessel were 2.58, 0.68, and 0.66, respectively, in a research by Davies JA et al. The Pulsatility Index and Resistance Index for the Middle Cerebral Arterial blood vessel (MCA) S/D ratio were 6.23, 1.13, and 0.75, respectively. The average Pulsatility Index for the MCA/UC ratio was 0.94, while the average Resistance Index was 1.21. The average S/D ratio was 2.26, the average Pulsatility Index was 0.498, and the average Resistance Index was 0.642 in a research by Malik R et al Umbilical Arterial blood vessel. The average S/D ratio for the Middle Cerebral Arterial blood vessel (MCA) was 6.468, the average Pulsatility Index was 1.834, and the average Resistance Index was 0.583. The average Pulsatility Index for the MCA/UC ratio was 0.953, and the average Resistance Index was 1.33. In this investigation, aberrant

S/D ratios in the umbilical arterial blood vessel were detected in 80 (20%) instances, abnormal Pulsatility Index in 106 (26.5%) cases, and abnormal Resistance Index in 116 cases (29 percent). In the Middle Cerebral Arterial blood vessel, abnormal S/D ratio was discovered in 56 instances (14%), abnormal Pulsatility Index in 16, and abnormal Resistance Index in 22 cases (5.5 percent). An abnormal Pulsatility Index was detected in 86 (21.5%) of MCA/UA ratio cases, while an abnormal Resistance Index was found in 104 cases (26 percent). Sharma U et al found that high-risk pregnant women had significantly higher S/D ratios, Pulsatility Index, and Resistance Index of the umbilical arterial blood vessel ($p < 0.001$). This suggested a rise in peripheral resistance and, as a result, a decrease in diastolic flow, putting the foetus at risk. Lower birth weight was linked to an aberrant S/D ratio and an abnormal Resistance Index of the umbilical arterial blood vessel in this research¹³⁻¹⁵. Lower birth weight is linked to aberrant S/D ratios, pulsatility indexes, and middle cerebral arterial blood vessel Resistance Indexes. A low birth weight is also linked to a high pulsatility index and a high Resistance Index of MCA / UA ratio. In high-risk pregnancies, Doppler velocimetry is the best method for monitoring fetal hypoxemia. This technique for monitoring fetal circulation is noninvasive. Its results are extremely useful in determining the hemodynamics of fetal blood vessel vascularity. The umbilical and middle cerebral arteries are the most typically examined vessels. Doppler measurement of the middle cerebral arterial blood vessel is a well-known method for detecting fetal impairment¹⁶. Sumangali PK et al used Doppler flow velocimetry of the Middle cerebral Arterial blood vessel and umbilical arterial blood vessel to assess 180 pregnant women with high risk factors, computing S/D ratio, Resistance indices, and Pulsatility indices¹⁷. In this research, all indices, including PI, RI, and S/D ratio, exhibited a gradual decrease with increasing gestation in normal pregnant women, indicating a decrease in peripheral resistance and an increase in diastolic flow in both the umbilical and middle cerebral arteries¹⁸. In an observational cross-sectional analysis of four fetal vasculature, Arduini and Rizzo discovered that combining the middle cerebral and umbilical arterial blood vessel Doppler velocimetry indices to produce ratios was the most effective averages of predicting neonatal consequence. They eventually came to the conclusion that these ratios were better at predicting fetal hemodynamic changes than single vascular Doppler indices¹⁹. As a result, combining umbilical arterial blood vessel Doppler velocimetry parameters with middle cerebral arterial blood vessel Doppler velocimetry indices would be the most effective approach of detecting fetal impairment as soon as possible and regularly monitoring any high-risk pregnancies. Sumangali PK et colleagues identified a link between the S/D ratio, resistance indices, and pulsatility indices of the umbilical arterial blood vessel and the Middle cerebral arterial blood vessel in a research²⁰. A high MCA/UC PI and RI ratio was linked to poor peri-natal

consequences such as thick meconium stained liquor, Apgar 7 at 5 minutes, respiratory difficulties within 72 hours, NICU admission within 72 hours, and small for age. Abnormal MCA/UA Doppler ratio is highly associated with worse fetal prognosis, according to a research by Sumangali PK et al. Mikovic et colleagues discovered that the average (SD) birth weight of the high-risk group with aberrant Doppler indices was 1327 ± 245 gm, with a neonatal mortality rate of 8.6% and a peri-natal mortality rate of 14.3%. Sumangali PK et colleagues discovered that an aberrant MCA/UA Doppler ratio is closely linked to a poor prenatal consequence. Low birth weight, premature birth, and admission to the NICU were statistically significantly more common in foetuses with aberrant Doppler velocimetry. Late-onset SGA foetuses with normal Doppler velocimetry indices on diagnosis exhibit deterioration starting at 37 weeks gestation, with a negatively worsening utero-placental ratio and a reduction in the MCA pulsating index (PI). In numerous investigations, aberrant Doppler indices were associated with a higher proportion of NICU admissions²¹. The Doppler examination was found to be quite beneficial in predicting peri-natal consequence in our research. Sumangali PK et al. found that a third-trimester Doppler examination is particularly beneficial in predicting fetal consequence in high-risk pregnancies. An abnormal arterial Doppler is unmistakably linked to a poor neonatal consequence, necessitating early delivery. Doppler data combining umbilical and cerebral velocimetry adds to the picture of the fetal effects of the placental anomaly. A high MCA/UA PI Doppler ratio was linked to a poorer fetal prognosis and consequence. At any gestational age, the diastolic component of the cerebral arteries is less than that of the umbilical arteries in normal pregnancies. As a result, the cerebrovascular resistance stays larger than the placental resistance, and the MCA/UA ratio exceeds one. When the flow distribution in abnormal pregnancies favours the brain, the index falls below one. Deora R et al found a decrease in placental perfusion and an increase in blood-flow to the brain. The brain sparing effect is the name given to this occurrence. This effect is thought to compensate for fetal hypoxia, and it's usually linked to fetal growth retardation and a decreased umbilical arterial blood vessel pH. As in normal foetuses, the cerebrovascular index diminishes throughout time, allowing hypoxia to be compensated by brain hyperperfusion.

CONCLUSION

Abnormal Doppler velocimetry indices of the umbilical arterial blood vessel in high-risk pregnancies predict poor peri-natal consequences such as thick meconium stained liquor, Apgar 7 at 5 minutes, respiratory difficulties within 72 hours, NICU admission within 72 hours of delivery, and small for age. A high S/D ratio, PI, and RI of the middle cerebral arterial blood vessel all predict a poor neonatal consequence. An abnormal MCA/UC PI and RI ratio was

linked to a poor peri-natal consequence. In high-risk pregnancies, aberrant Doppler velocimetry indices are a good predictor of poor peri-natal consequences.

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CORRELATION OF ADVANCED MATERNAL AGE AND OBSTETRIC OUTCOME: ANALYTICAL STUDY FROM NORTH INDIA

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Abstract:

Background: Maternal age is a key factor of pregnancy outcome in obstetric practise. Due to lifestyle changes such as the quest of higher education and career success, women have postponed childbearing in recent years. As a result, the maternal age rises, resulting in a slew of issues during pregnancy, labour, and delivery, as well as for the newborn.

Aims & objectives: The goal of this study was to look at the effects of advanced maternal age on the mode of conception as well as obstetric and perinatal outcomes in elderly primigravida.

Methods: This was a two-year prospective hospital-based study in 200 elderly primigravida admitted after meeting appropriate exclusion criteria in a medical college. Pregnant women over 35 years of age, both primigravida (delayed childbirth) and multiparous women, are eligible for inclusion (continued childbearing).

Results: Infertility was the most common cause of delayed conception (35 percent). The rate of miscarriage was 11%, and ectopic pregnancy was 4%. The number of caesarean sections performed was extremely high (70 percent). 65 percent of them experienced pregnancy problems, the most prevalent of which were gestational diabetes mellitus (22 percent), gestational hypertension (12 percent), and preterm labour (12 percent) (17 percent). Preterm (17%) and FGR (8%), respectively, were the most common problems among the babies delivered, and 64 babies required NICU care for various causes including preterm and respiratory distress. There were no cases of maternal or newborn death.

Conclusion: Pregnancy in women over the age of 35 is associated with a higher risk of perinatal and maternal morbidity and mortality. Individualize and perhaps reduce the risks for women of advanced maternal age with effective preconception counselling and comprehensive prenatal care assessment.

Keywords: Elderly primigravida; Pregnancy; Maternal complication

Introduction:

Over the last three decades, there has been a rising tendency of postponing childbirth - both before and after the age of 35. The rising use of reproductive technologies, as well as massive changes in work and society, such as higher levels of female employment (especially in high-level positions) and educational attainment, could explain this trend¹. These societal trends, combined with better birth control and a wider range of infertility treatments, have resulted in a continually growing group of women who become pregnant after the age of 35, despite the hazards associated with the latter^{2,3}. Pregnant ladies above the age of 40 are no longer unusual. Several stereotypical groupings of women who opt to become pregnant after the age of 35 have also been found in studies^{4,5}. It is commonly known that a woman's fertility declines considerably as she gets older. Following that is a quick review of pertinent literature on the major risk variables⁶. The degrading nature of oocyte genetic material is well recognised to diminish conception success and increase aneuploidies in AMA (Advanced Maternal Age). Due to inadequate completion of the oocyte cell cycle, the risk of foetal chromosomal abnormalities is increased in older women. It's difficult to explore the role of

the ageing oocyte in pregnancy difficulties because oocyte donation (as part of IVF or in vitro fertilisation) is a separate risk factor for poor pregnancy outcomes^{7,8}. Furthermore, comparing the results of births produced using 'young' donor eggs in women of AMA against women of ideal reproductive age is complicated by the fact that the latter group of women has primary infertility concerns⁹. With increasing maternal age, the probability of aneuploidy increases considerably. The FASTER (First and Second Trimester Evaluation of Risk) research, which enrolled almost 30,000 women between 10 and 14 weeks of pregnancy in a prospective multicenter investigation of singleton pregnancies, found that as maternal age increased, so did the rates of threatening abortion and miscarriage^{10,11}. Women over the age of 35 should expect to be admitted to the hospital twice as often as their younger counterparts. The probability of being diagnosed with hypertension is double higher in older women. Over the course of several decades, there has been a plethora of research on this subject^{12,13}. Diabetes mellitus becomes more common as people get older. When compared to women aged 20-29 years, the rates of both pre-existing and gestational diabetes

increase 3- to 6-fold in women 40 years and older. Diabetes during pregnancy can cause serious difficulties for both the mother and the unborn child^{14,15}. Diabetes was found to be 4.1 percent in primigravidas aged 35 years or older, compared to 1.7 percent in multiparous controls of a younger age range. Although the absolute incidence of placenta praevia in nulliparous women 40 years or older was minor, Gilbert W.M et al. did identify a 10-fold greater risk of placenta praevia in nulliparous women 40 years or older when compared to women 20-29 years (0.25 percent vs 0.03 percent). Preterm birth was also shown to be more common in older moms (19 percent vs 5 percent). There was a definite trend of breech births increasing with age, with the lowest prevalence in the 15-19 year age group and over 7 times the frequency in the 35 and above age group. Conception with assisted reproductive technologies (ART) and ovulation inducement are currently the most common causes of multiple pregnancies in older women (OI). According to a 2002 study by the Centers for Disease Control and Prevention (CDC), these procedures were responsible for 0.7 percent of all 3.9 million births in the United States in 1998. Because a woman's risk of Leiomyoma rises with age, she has more time to acquire gynaecological abnormalities, the most frequent of which are fibroids. Low birth weight and preterm birth were substantially linked with maternal age below 20 years and over 30 years. A significant amount of the recent increase in the rate of low birth weight (LBW) and preterm (PTD) delivery can be attributed to advanced mother age. Lethal congenital and chromosomal anomalies were responsible for a considerable fraction of perinatal deaths in older women. Maternal mortality is higher in women over the age of 35, however better medical treatment may reduce the risk. This is exacerbated by the fact that many women in developing nations lack access to maternity hospitals or qualified specialists to deliver their babies. Women over the age of 35 are more likely to have preexisting medical disorders such as heart disease, diabetes, and hypertension. This cohort also had other lifestyle variables such as maternal obesity, which are all risk factors for poor pregnancy outcomes like SGA (small for gestational age), FGR (foetal growth restriction), LGA (big for gestational age), premature birth, and stillbirth. The increased rates of intrapartum caesarean sections have been linked to AMA. Dystocia - a protracted and difficult labour - can also affect AMA women. According to another study, 40-45 percent of moms over the age of 35 had a prolonged second stage of labour, compared to only 16 percent of mothers aged 20-24. The lower uterine contractility associated with AMA could explain the greater rates of dysfunctional labour. Several

studies have attempted to investigate the association between maternal age and pregnancy outcome, but most investigations have revealed inconsistent results when it comes to advanced maternal age, as indicated by the above studies.

Aims & objectives:

The goal of this study was to look at pregnancy and delivery outcomes in a group of women in their forties and fifties, as well as the complicated impact of medical and obstetrical factors on birth results. Other risk factors and causes were studied and compared to those found in the literature whenever possible.

MATERIALS AND METHODS

A prospective observational study was carried out in the department of Obstetrics and Gynaecology of a medical college in North India. The research was place over a two-year period. Pregnant women over the age of 35 were included in the study, including primigravida (women who haven't had children yet) and multiparous women (continued childbearing). For the sample size calculation, hospital data from the previous three years were evaluated, and the average prevalence of advanced maternal age was set at 10%. A total of 72 advanced maternal age pregnancies were included in the study. As a result, the study's sample size was set at 80. The sample size was raised to 200 instances to account for any potential dropouts. This study involved pregnant women who were admitted for delivery throughout the study period and met the inclusion criteria. After receiving verbal consent, the women were enrolled in the study from the labour ward. These women's demographic information, as well as their gestational age at the time of delivery and pregnancy problems, were recorded. They were tracked until discharge and birth method was determined; perinatal outcomes, as well as any intrapartum and postpartum problems, were recorded on a specifically created study proforma. The hospital's ethics committee gave its approval to the trial.

RESULTS

It's important to remember that the goal of this research is to offer an update on our current understanding of the effects of advanced maternal age on pregnancy outcomes. Demographics, maternal outcomes, and newborn outcomes were evaluated in three major categories in the current study's sample. The results in each category are presented, discussed, and contrasted with earlier works from literature in the sections that follow.

Table 1: Age Distribution

Age (years)	Number	Percentage (%)
35 – 36	86	43
37 – 38	64	32
38 – 39	24	12
> 40	26	13

Maximum study population was in the age group of 35 to 36 years followed by 37 to 38 years.

Table 2: BMI

BMI	Number	Percentage (%)
20 – 25	38	19
25 – 30	122	61
> 30	40	20

Maximum study subjects were in the BMI range of 25 to 30 years.

Table 3: Marital Life

Marital Life (years)	Number	Percentage (%)
< 5	46	23
5 – 10	58	29
10 – 15	66	33
> 15	30	15

Maximum study subjects were having married life in the range of 10 to 15 years.

Table 4: Educational Status

Educational Status	Number	Percentage (%)
Primary School	20	10
High School	60	30
Higher Secondary	56	28
Graduate / Post-graduate	64	32

Maximum study subjects were highly educated with graduation or postgraduation.

Table 5: Reasons for Late Childbearing

Cause	Number	Percentage (%)
Idea of Large Family	8	4
Remarriage	30	15
History of Subfertility	70	35
Failure of contraception	10	5
Desire for Male Child	24	12
Late Marriage	34	17
Pursuit of Career	20	10
Bad Obstetric History	4	2

Maximum study subjects who were having late child bearing were having history of subfertility.

Table 6: Parity

Parity	Number	Percentage (%)
Primiparous	68	34
Multipara	132	66

Age, BMI, educational status, marital status, parity, and reasons for late childbirth were all used to analyse the demographics of the study population. Tables 1 through 6 show the outcomes. In this study, the average age group was 37.6 years. Overweight was found to be the most common BMI category in the population (61 percent). The majority of them had been married for a longer period of time; this distribution might be explained by either a history of infertility or the pursuit of their career. The majority of pregnant women over the age of 35 were multipara (66 percent). This could be due to a rise in divorce and remarriage rates, as well as a desire to have a large family.

Table 7: Mode of Conception

Conception	Number	Percentage (%)
Spontaneous	140	70
ART		
IVF	16	8
Donor Egg	32	16
Donor Sperm	4	2
Ovulation Induction	8	4

Table 8: Number of Fetus

Number of Fetus	Number	Percentage (%)
Singleton	172	86
Multiple	28	14

Table 9: Medical and Surgical Disorders

Maternal Diseases	Number
Overt Diabetes Mellitus	12
Chronic Hypertension	16
Rheumatoid Arthritis	2
Fibroid Uterus	4
Colloid Hyperplastic Goiter	2
Mild Concentric LVH* with mild TR and mild LR	2

Table 10: Pregnancy Losses

Pregnancy Losses	Number
Miscarriage	22
Ectopic Pregnancy	8

Table 11: Second and Third Trimester Complication

Complications Percentage (%)	Number
Severe Oligo	4
Fetal Anomalies	2
Preterm Labor	34
Abruption	6
Placenta Previa	8
Preeclampsia	9
Eclampsia	0
Gestational Hypertension	24
Gestational Diabetes Mellitus	44

Tables 7-11 show the variables utilised to investigate the following category, namely maternal outcomes. 70% of the participants in the study conceived naturally, whereas 30% used assisted reproductive technology. The bulk of the pregnancies in the study group were singletons (86%) and 14 percent were multiple pregnancies (twins 12% and triplets 2%), which is significant. Hypertension (8 percent) and overt diabetes were the most frequent pre-existing medical disorders in our study population (6 percent). Out of the 170 patients who eventually gave birth, 44 had a normal vaginal delivery, 6 had an instrumental delivery, and 120 had a caesarean section.

Discussion:

Maternal age is a key factor of pregnancy outcome in obstetric practise. Due to lifestyle changes such as the quest of higher education and career success, women have postponed childbearing in recent years. As a result, the maternal age rises, resulting in a slew of issues during pregnancy, labour, and delivery, as well as for the newborn. Parity, obstetric complication (antepartum haemorrhage and premature rupture of membranes), medical illness related with pregnancy (hypertension in pregnancy and gestational diabetes), and mode of delivery were the most important obstetric characteristics (normal vaginal delivery, instrumental delivery and caesarean section). Birth weight, NICU (neonatal intensive care unit) hospitalizations, and

other perinatal data were compared. Any vaginal bleeding after 28 weeks of pregnancy and before the baby's birth was referred to as antepartum haemorrhage (APH). Women with pre-existing hypertension were classified as having chronic hypertension, whereas those with new onset hypertension after 20 weeks of pregnancy with or without proteinuria were classified as having preeclampsia and pregnancy induced hypertension, respectively. Eclampsia is a type of convulsion that occurs in hypertensive women. The term "hypertensive condition of pregnancy" was coined to describe all of these different kinds of hypertension. If a woman had a history of diabetes or was diagnosed for the first time during pregnancy (GDM – carbohydrate intolerance of variable severity first noticed during pregnancy), she was classed as diabetic. Preterm birth refers to the termination of a pregnancy before 37 weeks of gestation. Normal vaginal delivery or caesarean section are the two options for delivery. Low birth weight was defined as a birth weight of less than 2500 grammes. Birth weights of less than 1500 g were considered very low, while birth weights of more than 4000 g were considered macrosomia. At 11–13 (+6) weeks of pregnancy, a nuchal translucency (NT) scan was performed to determine the amount of fluid collected in the nape of the foetal neck cut-off: 2.5 or 3.0 mm. TIFFA is a procedure that involves a comprehensive scan and assessment of the foetus for any anomalies between 18 and 23 weeks of pregnancy. At 32 weeks'

gestation, the Triple Marker Test for Alpha Fetoprotein rises from 0.20 ng/ml to 250 ng/ml in females of all ages, hCG is 4,060 - 165400 mIU/ml, and Estriol is 14.60 ng/ml (Pregnancy Third Trimester). The information is gathered through interviewing the individuals. Using univariate and bivariate analysis, the observations were then inferred. The statistical analysis was carried out using SPSS and Microsoft Excel. Women under the age of 35 should be screened for foetal aneuploidy since they have a higher risk of chromosomal abnormalities. The necessity for invasive treatments can be considerably decreased with the availability of non-invasive, sensitive biochemical assays in combination with nuchal scan. Due to an increased incidence of pregnancies following ARTs, numerous pregnancies, pregnancy complicated by medical problems, and the physician's attitude, there is a rising trend of caesarean section in advanced maternal age. Older women have a higher rate of caesarean births because they are assumed to be at more danger or that their pregnancies are more valuable. For these reasons, it is recommended that women do not delay conception and that they become pregnant as soon as possible to minimise age-related difficulties. When compared to Palival V et al (74%) and Giri A et al (30%), Kalewad P et al (40%), Chan BC et al., and Moses V et al., the incidence of caesarean section was lower (34%) and higher (50%) among mothers who delivered (66 percent). In addition, when compared to Giri A et al., the incidence of instrumental delivery is lower (6.6 percent). In the second and third trimesters, just 27% of the 170 births were free of problems. The most common problems were gestational diabetes mellitus (25.88 percent), preterm labour (20 percent), and gestational hypertension (10 percent) (14.11 percent). When compared to Moses V. et al (10%), the incidence of oligohydramnios among the moms who delivered is lower, but higher when compared to Kalewad P et al (2 percent).

Conclusions

This research has provided critical information on maternal and newborn outcomes as a result of the global trend of increased maternal age. Obstetricians and gynaecologists have a responsibility to treat the growing epidemic of elderly motherhood and the challenges that come with it, as well as to educate women about the hazards of postponing childbearing. For women seeking a pregnancy at any age, a good preconception consultation and intensive antenatal care assessment can individualise and perhaps reduce the risks. Patients over the age of 35 have seen an increase in obstetric difficulties, therefore this group of patients should be regarded a high-risk category for obstetrics, requiring special attention and careful treatment in a multidisciplinary tertiary care institution.

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Low Back Pain in Reproductive Female: Assessment of Hormonal and Reproductive Factors

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ABSTRACT

Introduction: Low back pain related disability and work absence accounts for high economical costs in modern society. A prevalence of 28-80% has been found with increase of prevalence with age and female preponderance

Methods: The present study was conducted on 250 non pregnant women complaining of low back pain attending Department of Obstetrics and Gynaecology, Adani Institute of Medical Science, Bhuj, Gujrat


Results: Low back pain was associated with high BMI, high waist circumference, more number of children, irregular and prolonged duration of menstruation, young maternal age at first birth and with history of abortion.

Conclusion: Hormonal and reproductive factors are associated with low back pain

Keywords: Hormonal factors, Reproductive factors, Reproductive female

INTRODUCTION

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Low back pain is defined as pain and discomfort, localized below the costal margin and above the inferior gluteal folds, with or without referred leg pain. Chronic low back pain is

defined as low back pain persisting for at least 12 weeks, unless specified otherwise. A simplified and practical classification, which has gained international acceptance, is to divide low back pain into three categories-the so called "diagnostic triage"¹ : 1. Specific spinal pathology 2. Nerve root pain/radicular pain 3. Non-specific low back pain Low back pain is common disorder, affecting around one-third of UK adult population each year. About 20% of people of low back pain (that is 1 in 15 of population) will consult their GP about it. The presence of low back pain during pregnancy is widely reported. 2-5 One systematic review identified 56 population prevalence studies of low back pain (Walker 2000). Thirty studies were of acceptable quality. Point prevalence of low back pain ranged from 12-33%. The two reviews on low back pain in school children and adolescents reported a prevalence approaching that reported for adults.^{6,7} Low back pain fluctuates over time with frequent recurrences and exacerbations.⁸ The first review reported that, after a first episode of low back pain, the proportion of patient who still experienced pain after 12 months was on average 62% (range 42-75%), the percentage

who experienced relapses of pain was 60% (range 44-78%) and the percentage who had relapses of work absence was 33% (range 26-37%).⁹ Factors which are associated with low back pain are young age at menarche, irregular or prolonged menstruation, past pregnancy, young maternal age at first birth, and duration of oral contraceptive use, hysterectomy and use of estrogens during menopause.¹⁰ Other factors associated with low back pain are previous miscarriage, presence of endometriosis, clinically suspected pelvic inflammatory disease, caesarean section scar, pelvic adhesions, sexual abuse, anxiety, and depression. Back pain is a commonly described symptom of the premenstrual syndrome.¹¹ The aim and objectives of the study was to study the hormonal and reproductive factors associated with low back pain in reproductive female.

MATERIALS AND METHODS

The present study is a prospective study conducted on 1000 subjects attending Department of Obstetrics and Gynaecology, KPC Medical College, Jadavpur, Kolkata over a period of 18 months. The subjects were randomly allocated and found 250 patients suffering from low back pain. Inclusion criterion 1. Women attending outpatient department of obstetrics and Gynecology in UISEMH. 2. All females of age 20-45 yrs. of any religion and socioeconomic status. Exclusion criterion 1. Women who have attained physiological menopause. 2. Subjects who were not able to communicate because of dialect or hearing problems. Study protocol A brief questionnaire was used to screen, among the respondents, the occurrence of low back pain in the past year. The questions included occurrence of low back pain, demographic factors and reproductive health history. Low back pain was identified among subjects who have back pain lasting for more than a day in an area between the lower coastal margin and the gluteal folds with or without radiation into leg to below the knees during the past one year. The anthropometric measurements included measures of body height (cm) and weight (kg) using standard measurement equipment's. Waist and hip circumference (cm) were assessed using a measuring tape while the subject was standing. Other factors evaluated were occupation, education and smoking. Sociodemographic profile, menstrual and obstetric history were noted and also the use of oral contraceptives.

RESULTS

Out of 1000 subjects, 250 were patients of low back pain. Majority of patients, 56.8% were in age range of 40-45 years and only 11.6% in 20-30 years of age group. Out of 250, 56.4% belongs to socioeconomic class 1 and 2. Only 73 patients had education of university and above. 24.8% (62/250) were labourers and rest 75.2% had some other occupation. In our study 60.4% (151/250) patients had height below median (153 cm) whereas 39.6% (99/250) had their heights above median. Similarly, 55.2% (138/250) had

weight below median (60 kg) and only 44.8% had weight above median.

Patients with BMI ($>25\text{kg/m}^2$) were 54.4% and 45.6% had BMI below 25 kg/m^2 . 111 out of 250 had waist circumference of <80 cm and 139 (59%) had more than 80 cm. Their waist-hip ratio is <0.8 in 132 patients (52.8%).

Majority of patients had more than two parity (64.8%). Patients with vaginal and caesarean delivery were 122 (48.8%) and 128 (51.2%) respectively. 144 patients out of 250 had irregular menstruation. Majority of them (64.8%) had duration of flow of more than 8 days. 164 patients had premenstrual syndrome. 69.2% patients had undergone sterilization and 41.2% (103/250) were using oral contraceptives. 161 patients had history of abortion and 38.8% patients had pelvic organ prolapse.

DISCUSSION

The study showed that hormonal and reproductive factors like irregular or prolonged menstrual cycle were associated with low back pain. Estrogen related factors like past pregnancy, young maternal age at first birth, oral contraceptive use were specifically associated with low back pain. Young age at menarche was also associated with low back pain. One theory is that increased estrogen results in increased laxity of joints and ligaments. This increased laxity then leads to LBP. Like results from other studies, association was found between the number of children and low back pain.^{12,13} A previous population based survey found a linear association between the number of live births and chronic low back pain. Results from our study suggest that there is association between the parity and low back pain. In a population based survey among women younger age at first pregnancy was also associated with a high prevalence of ever having low back pain.¹³ Our study shows association between younger age at first pregnancy and low back pain (Table 3). In 1995, Brynhildsen et al reported that many health professionals believe that there is an association between oral contraceptive uses with low back pain, despite the lack of scientific evidence.¹⁴ Unlike this study our study showed no association between oral contraceptive use and LBP. We found menarche at young age (<11 YEARS) to be not associated with LBP. Although LBP is positively correlated with menstruation in women and back pain is a common symptom of the premenstrual syndrome, there are only few studies describing the association between the menstrual pattern and musculoskeletal disorders.^{12, 15.}

CONCLUSION

Hormonal and reproductive factors like an irregular or prolonged menstrual cycle are associated with low back pain, suggesting that these factors are associated with musculoskeletal pain in general. Factors related to increased estrogen levels like past pregnancy, young maternal age at first birth, duration of oral contraceptive use may

specifically increase the risk of low back pain. More research is needed to examine these associations and unravel biologic explanations.

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