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PREVALENCE OF ASTHMA AMONG PREGNANT FEMALES OF NORTH WEST RAJASTHAN:A TERTIARY CENTRE BASED STUDY

KEY WORDS: Bronchial asthma, Pregnacy, Prevalence

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ABSTRACT

Asthma is a common problem all around the world with variable prevalence ranging from 1% - 18% in different age and geographical distribution. Pregnancy is a physiological state experienced by most of women in their reproductive age, due to high prevalence of asthma in general population it seems, that a fair number of pregnant women will suffer from asthma. This study was carried out in Respiratory Division, Department of Medicine and the Antenatal clinic in the Department of Obstetrics & Gynecology at the PBM Group of Hospitals Associated to S.P. Medical College, Bikaner. Out of the 2400 pregnant women screened with the questionnaire, 70 pregnant women were declared positive by this questionnaire, 52 were clinically diagnosed as asthma. The prevalence of asthma is derived as 2.1%.

INTRODUCTION

Asthma is a common problem all around the world with variable prevalence ranging from 1% - 18%[1] in different age and geographical distribution. There are proximately 300 million affected individuals in the whole world.

Pregnancy is a physiological state experienced by most of women in their reproductive age, due to high prevalence of asthma in general population it seems, that a fair number of pregnant women will suffer from asthma.

Study suggests that approximately 4.1% of all pregnant women had experienced an asthma attack in previous year[2]. There are growing prevalence and morbidity, due to asthma associated with pregnancy. Recent study in USA suggests 3.7 – 8.4% of women had asthma in 1997 – 2001, as compared to 3.2% according to data 1988 – 1994[3].

Pregnancy induces significant changes in pulmonary physiology of pregnant women. These physiological changes have the potential to affect the clinical course of asthma, associated with pregnancy. The main concern in the gravida with asthma is adequate O_2 delivery to mother and fetus and there are variety of physiological changes to consider, which involve the endocrine system, CVS and the respiratory system.

Course of asthma in pregnancy is unpredictable, study suggest that about 1/3rd of the women have reduction in asthma symptom, another 1/3rd have exacerbation and rest of 1/3rd showed no change in symptoms[4,5].

On the contrary asthma also had adverse effect on fetus and maternal outcomes in pregnant women. Various historical and prospective cohort studies have investigated the effect of maternal asthma on pregnancy outcomes, study suggest that asthmatic women are more at risk of low birth neonate, pre term delivery, IUGR, congenital deformities and increase hospital stay. Maternal risk includes; pre term labor, preeclampsia, hypertension ante partum and postpartum hemorrhage, increase cesarean section and forceps delivery.

It therefore seems that there may be a slight increased risk to the babies of asthmatic mothers, but this risk is small in actively managed patients and may be minimized by maintaining good control of asthma throughout pregnancy.

Data regarding variation in presentation of asthmatic problem in pregnant women needs to consider in severity of anemia and malnutrition which have untoward effect on progress and outcome of pregnancy. In this study we will also try to rule out the possible implication of these co-findings.

While reviewing literature on subject of maternal and fetal outcomes of asthma among pregnant women, this study will also be planned to study prevalence of asthma among pregnant women attending antenatal clinic of P.B.M. Hospital Bikaner.

MATERIAL AND METHODS

The study was carried out in Respiratory Division, Department of Medicine and the Antenatal clinic in the Department of Obstetrics & Gynecology at the PBM Group of Hospitals Associated to S.P. Medical College, Bikaner.

1. The study was carried out in the year 2016 through the months from January till December selecting one day in each week.
2. 2400 consecutive pregnant women attending the antenatal clinic were taken as study population for screening.
3. Each of the women was evaluated for age, height, weight, gestational age, gravidity, parity, and number of living children. The hemoglobin levels of each of these women were noted.
4. Each of them was asked to fill out the asthma questionnaire translated in Hindi based on the questionnaire developed for International Union Against Tuberculosis and Lung Disease (IUATLD).
5. A total of 70 pregnant women were declared positive by this questionnaire.
6. These women were then evaluated by interrogation and clinical examination.
   - 6 patients were found to be having purely cardiovascular disease.
   - 12 women were found to be having respiratory disorders other that asthma.
   - Remaining 52 women were clinically diagnosed as cases of asthma and treated as subjects.
7. These 52 subjects underwent further evaluation by filling the proforma in addition to the obstetrical examination conducted by the obstetrician.
8. Ventilatory pulmonary function tests (VPFT) were conducted on each of these subjects. Our study determined % predicted values of Forced Vital Capacity (FVC) and Forced Expiratory Volume in 1st second (FEV1). A post bronchodilator FEV_1 value was also taken. All work done by candidate himself.
9. The patients were then classified according to clinical severity as per GINA guidelines.

Intermittent asthma: symptoms less than once a week, brief exacerbations & nocturnal symptoms not more than twice a month.

Mild Persistent asthma: symptoms more than once a week but

less than once a day, exacerbations may affect activity and sleep & nocturnal symptoms more than twice a month.

Moderate Persistent asthma: symptoms daily, exacerbations may affect activity and sleep & nocturnal symptoms more than once a week.

Severe Persistent asthma: daily Symptoms, frequent exacerbations, frequent nocturnal asthma symptoms & limitation of physical activities.

10. Exclusion criteria for both subjects and controls were known multiple gestation, major congenital abnormality, active pulmonary disease other than asthma, long standing hypertension (BP >140.90).
11. Prevalence of asthma was calculated as the number of subjects categorised as having asthma divided by the total number of studied population.

OBSERVATIONS

Table 1 Prevalence of asthma during pregnancy in females attending ANC

	Number
Study population	2400
Positive by questionnaire	70
Upon clinical evaluation - Diagnosed as cardiovascular disease - Diagnosed as respiratory disease other than asthma - Diagnosed as asthma	 6 12 **52**

Out of the 2400 pregnant women screened with the questionnaire, 70 pregnant women were declared positive by this questionnaire, 6 patients were found to be having purely cardiovascular disease, 12 women were found to be having respiratory disorders other that asthma and 52 were clinically diagnosed as asthma. The prevalence of asthma is derived as 2.1%.

Table 2 Distribution of subjects as per their background clinical severity of asthma during pregnancy

Severity	Number (n=52)	%
Intermittent	25	48.1
Mild persistent	6	11.5
Moderate persistent	10	19.2
Severe persistent	11	21.2

The 52 pregnant women with asthma were classified into groups based on their background clinical severity. 25 were grouped as intermittent asthmatics, 6 were in the mild group, 10 in the moderate and 11 in the severe group.

DISCUSSION

Despite considerable research on the causes and treatment of asthma, there has been relatively little attention given to the growing problem of asthma in pregnancy.

There is **no gold standard** for the diagnosis of asthma. The first widely used questionnaire in respiratory epidemiology was the questionnaire from the Medical Research Council (MRC) of Great Britain. In the first version, from 1960, there were only a few questions about wheezing, but in later editions, more questions about asthma and asthma- like symptoms were added. The MRC questionnaire initiated the development of other questionnaires such as the European Community for Coal and Steel (ECSC) questionnaire of respiratory symptoms and the questionnaire from the American Thoracic Society and the Division of Lung Diseases (ATS-DLD-78). In Tucson, Ariz, a questionnaire was developed in the 1970s that was focused on the subject's own report of asthma. In Great Britain, a questionnaire was developed in the 1980s with the intention of finding the most valid symptom-based items for identifying asthma, "the IUATLD (1984) questionnaire."

The bronchial challenge test using methacholine is an investigation which has been used in making a diagnosis of asthma. Although most patients suffering from asthma in the absence of symptoms do show bronchial hyper-reactivity (BHR), it has been seen that many people with BHR report no respiratory complaints ever in their lives. In other words, the presence of BHR is a measure with high sensitivity but low specificity for asthma. Understandably such a semi-invasive test can not be an effective method for screening the population at large.

We have in our study used the modified version of the **IUATLD questionnaire**, to help us diagnose pregnant women having present or past symptoms of asthma. We have followed this up by a clinical evaluation to help us come to a diagnosis of asthma.

In this study, the prevalence of asthma during pregnancy was found to be **2.1%.** There are only few papers published about the prevalence of asthma during pregnancy. Demisse et al[22,32] in his publication had dealt on this matter and had mentioned that asthma affected between 0.4 and 1.3% of pregnant women. More recently Kwon et al[2] has discussed that recent estimates in the USA showed 3.7–8.4% of pregnant females as having asthma in 1997–2001; it was previously 3.2% according to data from the year 1988–1994.

In a multicentric study by Aggarwal et al[55], prevalence of asthma among women was found to be 2.51%, 1.84%, 2.06% and 3.75% in Chandigarh, Delhi, Kanpur and Bangalore respectively and the overall prevalence among women was 2.56%. There are no similar data available in indian scenario regarding the prevalence of asthma during pregnancy.

Our data about the prevalence of asthma during pregnancy compares favourably with the data of Aggarwal et al[54], although the figure is lesser than the prevalence revealed by the western literature.

We have classified the subjects in our study as per GINA guidelines based on **clinical severity**. Out of the 52 subjects, 25 (48.1%) were categorized as having mild intermittent asthma, 6 (11.5%) with mild persistent asthma, 10 (19.2%) with moderate persistent asthma and 11 (21.2%) having severe persistent asthma.

CONCLUSION:

Upon reviewing the observations in the present study and comparing with other data, it can be concluded that asthma is equally prevalent in pregnant women of this area when compared to the general women population around the country. Also asthma is a grossly underdiagnosed and undertreated disorder, especially during pregnancy. We conclude by stating that the pregnant patients with asthma should be advised that the greater risk to their baby lies with poorly controlled asthma, and the safety of most modern asthma treatments should be discussed and stressed.

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