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Incidence and Causes of Dyspnea in Pregnant Women: Experience from a Tertiary Care Hospital

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A B S T R A C T

Background: Dyspnea or shortness of breath may be a common symptom in pregnancy presenting in 60-70% of normal women.“It begins early in pregnancy, gets better as the pregnancy goes on, and reaches a plateau close to term. Because it doesn't interfere with daily activities, most women are able to bear it.

Objective: The aim of this study was to find out the incidence and causes of dyspnea in pregnant women.

Methodology: This study was carried out at the Department of Obstetrics and Gynecology, Bacha Khan Medical College/Mardan Medical Complex, Mardan, Khyber Pakhtunkhwa, from January 2017 to October 2019. Pregnant individuals with a live fetus present, experiencing dyspnea classified as New York Heart Association Classification class >II, were included using consecutive non-probability sampling. Comprehensive assessments including medical history, physical examinations, and various laboratory tests such as blood complete picture, thyroid function tests, chest x-ray, ECG, or echocardiography were conducted to rule out common causes of dyspnea. Statistical methods were employed to analyze the frequency and percentage of collected data.

Results: A total of 1200 obstetric patients mean age 29.5 ± 6 years, with dyspnea extending from NYHA>II were included The prevalence of dyspnea was 40% for all obstetric patients. 35% of patients had no apparent cause and 5% had an underlying reason for dyspnea. The causative agent of maternal cardiac lesions was 96 (57%) developed, 40 (23%), inherited 25 (15%), arrhythmias and 9 (5%) had heart muscle disease . Of pulmonary illnesses 28 (Eighty percent) were due to asthma, 4 (11.6%) infectious comprising TB and pneumonia, 2 (5.7%) had pulmonary edema and 1 (2.8%) established severe lung damage secondary to obstetric complications. A smaller amount additional reasons of dyspnea were sepsis 18 (90), n=1 (5%)were amniotic fluid embolism and 1 (5%) ruptured gall bladder.

Conclusion: Despite being a normal pregnancy change, dyspnea should not be ignored. The only indication of underlying life-threatening illness may be this. From our study it as concluded that Anemia, a prevalent disease, during pregnancy is the cause of dyspnea can be easily diagnosed and treated.

Keywords: Incidence; Causes; Dyspnea; Pregnant Women

Introduction

Dyspnea or shortness of breath may be a common symptom in pregnancy presenting in 60-70% of normal women.[1]"It begins early in pregnancy, gets better as the pregnancy goes on, and reaches a plateau close to term. Because it doesn't interfere with daily activities, most women are able to bear it. If the dyspnea does not interfere with everyday activities, seems to be stable early on, becomes better with time, and is not accompanied by signs of a cardiorespiratory illness, it is deemed physiolo-gic.[2] There is disagreement on the precise etiology of this dyspnea, while mechanical, hormonal, and physiological changes associated with pregnancy have all been suggested. The primary physiological changes in the respiratory system that lead to dyspnea include altered perceptions of normal breathing, hyperventilation as a reaction to reduced lung diffusion capacity, and heighten-ed sensitivity of the central chemoreceptors to carbon dioxide.[3] The mother must raise the respiratory rate in order to make up for the fetus's increased peripheral oxygen use. Analogously, alterations in the cardiovasc-ular system, including as elevated blood volume, reduced peripheral vascular resistance in the early stages of pregnancy, and elevated heart rate, result in amplified cardiac and metabolic strain.[4] The primary mechanical causes of dyspnea are the gravid uterus' upward protrusion of the diaphragm and the mechanical compr-ession of the lungs as a result of an increase in intra-abdominal volume. Since dyspnea can occur in the early stages of pregnancy when the uterus and fetus are still smaller, the significance of mechanical causes in this condition is debatable.[3,4] Progesterone is the primary hormonal factor. Progesterone has respiratory benefits. It starts at 4 weeks and continues through the second and third trimesters. In the first trimester, HCG is crucial as it stimulates thyroid function. The HCG's action can lead to exacerbation in women with asthma. Cortisol and estrogens have a minor impact. The Broncho constrictors include prostaglandin F class, thromboxane A2, and histamine.[5] Anemia is the leading cause of dyspnea in pregnant women.[6] Severe anemia can result in prematurity, spontaneous abortions, low birth weight, and maternal and fetal mortality.[7] Asthma is a significant factor in the development of dyspnea, as it is also prevalent among pregnant women. Asthma is a condition that improves with gestation in one-third of women, while it remains stable in the other three.[8] The risk of exacerbation is 18 times higher during Caesarean section than when it is delivered. Those with mild to moderate disease and well-managed asthma typically have an excellent pregnancy. Severe asthma in women increases the risk of preterm birth and pregnancy-induced hypertension, while low birth weight and intrauterine growth restriction are observed in fetal outcomes.[9] The primary reason for dyspnea in pregnancy is acute pulmonary edema. 1 in 500 tertiary care centers experience acute pulmonary edema.[10] Amniotic fluid embolism (AFE) is most comm-only exhibited in dyspnea. Due to the disruption in the uterine placental bed, this condition has a high mortality rate.[11]

By conducting a comprehensive assessment and excluding common causes of dyspnea, such as cardiac or respiratory problems, the study aimed to better understand the frequency and characteristics of dyspnea in this specific population. This understanding could lead to improved management and care for pregnant individuals experiencing dyspnea, potentially reducing associated risks and complications.

Objective

This study was conducted with the aim to find out the incidence and causes of dyspnea in pregnant women.

Methodology

This prospective study was conducted from January 2017 to October 2019 at the Department of Obstetrics and Gynecology, Bacha Khan Medical College/Mardan Medical Complex, Mardan, Khyber Pakhtunkhwa. A total of 1200 obstetric patients from the time of their pregnancy, a live fetus was present, and all patients with New York Heart Association Classification class >II dyspnea were included. Through consecutive non probability sampling after receiving informed consent and Institutional Review Board approval. People who have been diagnosed with cardiac, pulmonary, thyroid, and blood disorders, or had undergone surgery to remove their penis were not included. A complete history, physical examination, and laboratory tests were perfo-rmed to exclude common causes of dyspnea, such as blood Complete Picture, Thyroid function tests, x-ray chest, ECG, or echocardiography. To exclude structural cardiac disease, echocardiography parameters such as ejection fraction volume (EF), valvular function, pulmonary pressure, and ventricular function were studied for each participant, followed by an electrocardiogram to exclude rhythm disorders. Blood complete pregnancy, type of delivery and general condition were recorded with the mean SD. A statistical approach was used to determine the frequency and percentage of data. The correlation between dyspnea and mortality was investigated after gathering data.

Results

The study involved the enrollment of 1200 obstetric patients mean age 29.5 ± 6 years, with dyspnea extending

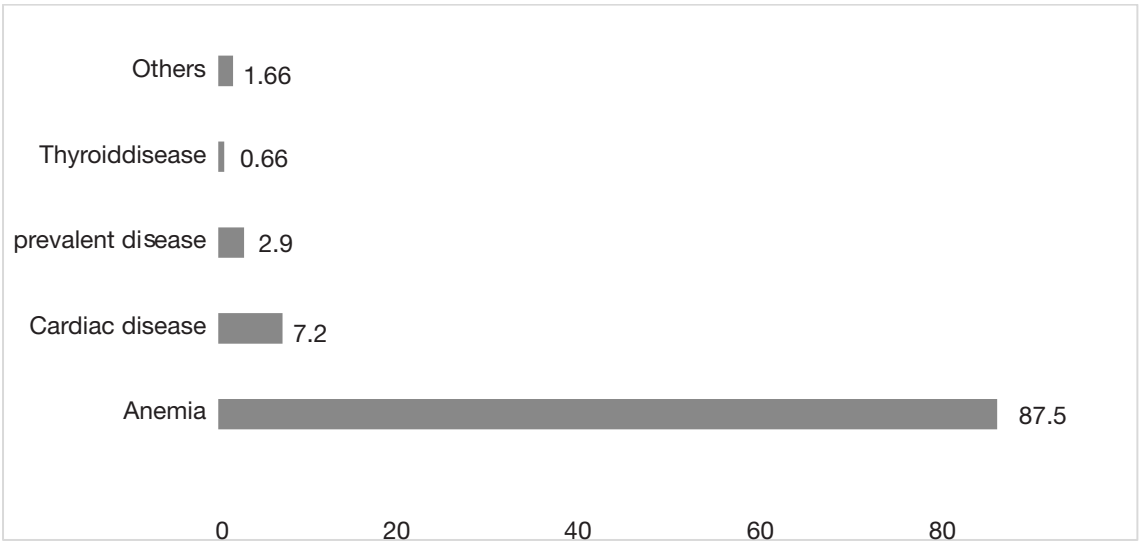

Figure 1. Causes of dyspnea during pregnancy

from NYHA > II. The prevalence of dyspnea was 40% for all obstetric patients. 35% of patients had no apparent cause and 5% had an underlying reason for dyspnea, as indicated by the (Figures 1). complete blood count was done for the diagnosis of anemia. Hemoglobin level below 7 gram per dl were considered sever anemic, those with 7HB were moderate and 10- 11.0 g/dL) were mild anemic. For the diagnosis of thyroid abnormalities Reference ranges were used. 0.1–2.5 mIU/L for first trimester, 0.2–3.0 mIU/L for 2nd and 0.3–3.0 mIU/L for 3rd trimester. Chest X-RAY was done with abdominal guarding only if clinically specified. Every month each subject was followed till the date of delivery or at progress of worsening of NYHA class or fetal or motherly problems. Demographic data comprising oldness, parity, Post-delivery figures containing length of gestation of identification was 30.5 ± 3.4 weeks, POG at carriage was 36 weeks ± 1.5 weeks, incidence of NYHA class 2

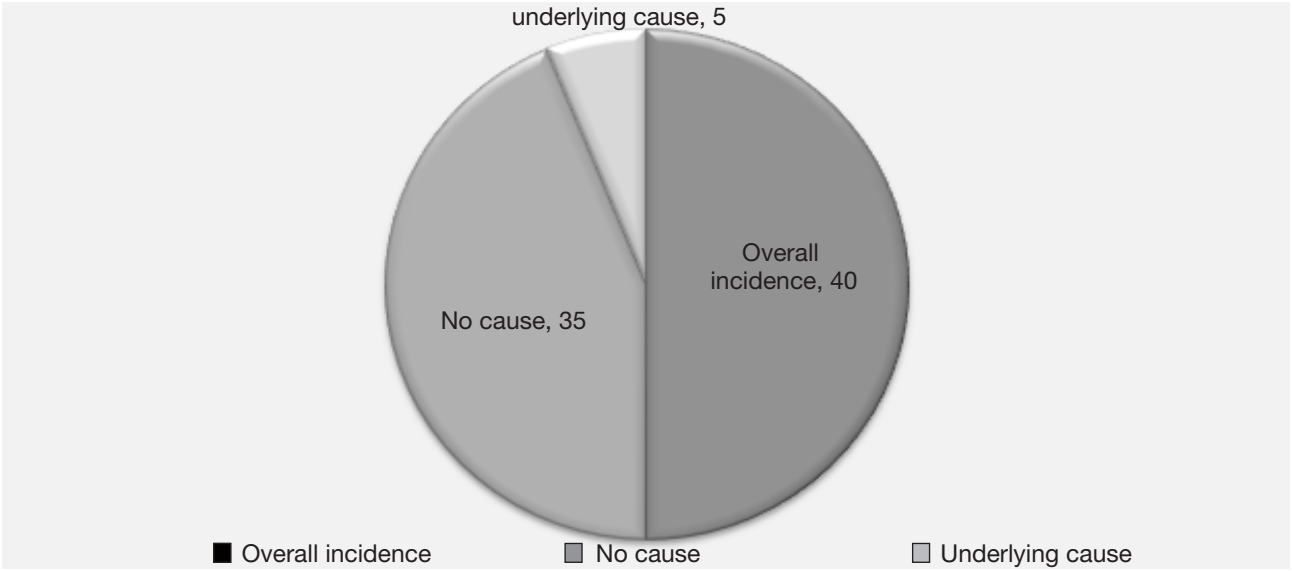

Figure 2. Percentage incidence of dyspnea

Table 1. Distribution of anemia in enrolled patients

Types of anemia	Frequency	Percentage
Iron insufficiency anemia	998	95%
Thalassemia	32	3%
megaloblastic Anemia	10	1%
diversified picture	10	1%

(68.0%), 3 (28.0%) and , 4. The chief cause of dyspnea is anemia n = 1050 (87.0%) followed by heart disease n = 87 (7.2%) pulmonary n = 35 (2.9%), thyroid n = 8 (0.66.0%) and other n = 20 (1.66%) as shown in figure 2. Iron insufficiency anemia was the cause in n = 998 (95.0%), n = 32 (3.0%) had thalassemia, ten (1.0%) megaloblastic Anemia and 10 (1.0%) had diversified picture. (Table 1). The causative agent of maternal cardiac lesions was 96 (57.0%) developed, 40 (23.0%), inherited 25 (15.0%), arrhythmias and 9 (5.0%) had heart muscle disease. Of pulmonary illnesses 28 (8.0%) were due to asthma, 4 (11.6%) infectious comprising TB and pneumonia, 2 (5.7%) had pulmonary edema and 1 (2.8%) established severe lung damage secondary to obstetric complications. (Table 2)

A smaller amount additional reasons of dyspnea were sepsis 18, n = 1 (5.0%) were amniotic fluid embolism and 1 (5.0%) ruptured gall bladder. Mode of delivery among study cases showed that 52.0% were vaginal delivery, 9.6% instrumental vaginal delivery and 1.4% assisted breech carriage. Death proportion was 220 out of 100,000 live births. Out of deaths eight percent were due to cardiac sickness matched to 0.3% owing to anemia. All the deaths were those who experienced stage three and four dyspnea.

Discussion

When there are no abnormalities in both the heart and lungs, dyspnea or breathing discomfort may be benign. The awareness of breathing is the primary symptom of dyspnea during pregnancy, rather than the uncomfortable recognition of the need for breathing. In our study, the prevalence of dyspnea was 40% for all obstetric patients. 35% of patients had no apparent cause and 5% had an underlying reason for dyspnea. These findings are comparable to a previous study carried out by Sahasrabudhe TR.[12] In our study, the chief cause of dyspnea is anemia n = 1050 (87%) followed by heart disease n = 87 (7.2%) pulmonary n = 35 (2.9%), thyroid n

Table 2. Maternal cardiac lesions and pulmonary illnesses in enrolled patients

Parameter	Sub category	Frequency	Percentage
Maternal cardiac lesions	Developed	96	57%
	Inherited	40	23%
	arrhythmias	25	15%
	Heart muscle disease	9	5%
Pulmonary illnesses	Asthma	28	80%
	TB and pneumonia	4	11.6
	Pulmonary edema	2	5.7
	Severe lung damage	1	2.8%

= 8 (0.66%) and other n = 20 (1.66%). It is crucial to consider the cause of dyspnea, as it can lead to more severe conditions such as pulmonary edema or embolism, pneumothorax, pneumonia, or worsening asthma. Cardiac disease or hematologic problems can affect the pregnant patient, leading to severe anemia and dyspnea. According to Rust et al, dyspnea is observable in normal pregnancies and can be experienced with various cardiac and pulmonary diseases.[13] The question of whether a pregnant woman has certain levels of cardiac or pulmonary disease or an isolated pregnancy-induced symptom is raised by the presence of dyspnea, as stated by Weinberger et al.[14] The study found that 60 out of 14 pregnant women experience dyspnea during pregnancy, with the majority occurring in their first and second trimesters.[14] Among the patients with dyspnea, 15 percent had asthma due to PRP or other respiratory problems.[15] This study differs from others in that in 87, anemia was the most common cause of dyspnea. Due to the unknown nature of cardiac diseases and their associated morbidity and mortality, the European Cardiac Society Guideline recommends precise evaluation in pregnant women with dyspnea.[16,17] In our study, iron insufficiency anemia was the cause in n = 998 (95.0%), n = 32 (3.0%) had thalassemia, ten (1.0%) megaloblastic Anemia and 10 (1.0%) had diversified picture. The causative agent of maternal cardiac lesions was 96 (57.0%) developed, 40 (23.0%), inherited 25 (15.0%), arrhythmias and 9 (5.0%) had heart muscle disease. Of pulmonary illnesses 28 (8.0%) were due to asthma, 4 (11.6%) infectious comprising TB and pneumonia, 2 (5.7%) had pulmonary edema and 1 (2.8%) established severe lung damage secondary to obstetric complications. Anemia was the leading cause of respiratory problems in the study population, and it is also a significant contributor to symptoms. Another study examined 90 percentage of patients with anemia.[18] In Pakistan, the rate of anemia among pregnant women in urban regions ranged from 29% to 50%. Studies have shown that iron deficiency anemia is more prevalent in pregnant women from Karachi (64%), Lahore (seventy three percent), and Multan (seventy six percent).[19,20]"Pulmonary disease was responsible for dyspnea due to pulmonary disorder was 2.9 percent which is comparable to former studies.[21] Further fewer over-all reasons of dyspnea were accountable for 1.66 percent circumstances.[22] The death rate for cardiac disease was 8%, while for due to anemia it was 0.3%. There are 210 deaths per 100,000 births worldwide. The mortality rate in Pakistan is estimated to be 23/100,000, whereas in the developed world, it is 14/10,000.[23] The mortality rate in this study was 220 per 100,000 live births, indicating a high prevalence of dyspnea. The death rate for cardiac disease was 8%. The incidence of anemia is 0.3%. The indirect cause of maternal mortality is cardiac disease, as indicated by other studies.[24] The significance of dyspnea as if it were an essential symptom in pregnant patients is being highlighted by this study. Although anemia is a public health concern in our country, it is also linked to cardiac disease, which has risen significantly during pregnancy and can lead to better outcomes for both mothers and babies.

Conclusion

Despite being a normal pregnancy change, dyspnea should not be ignored. The only indication of underlying life-threatening illness may be this. From our study it as concluded that Anemia, a prevalent disease, during pregnancy is the cause of dyspnea can be easily diagnosed and treated during.

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