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ASSESSMENT THE EFFECT OF SINGLE NORMAL PREGNANCY ON EXPIRATORY FLOW RATES

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ABSTRACT

Background: Dynamic PFTs are an important tool in the evaluation of the functional as well as fitness state of the respiratory system, also for the assessment of severity of illness. **Objective:** To assess the effect of single normal pregnancy on expiratory flow rates. **Patients and methods:** A cross- sectional analytical study was conduct in the unit of pulmonary function in association with the Department of Gynecology and Obstetrics, in Baghdad teaching hospital in Baghdad. The study consists of recording the Pulmonary Function Tests for two major groups of Iraqi female of childbearing age. Including 120 pregnant women of various phases of gestational period subdivided into 10 weeks (I trimester), around 24 weeks (II trimester), 37 weeks (III trimester) and control group of 40 non pregnant women of age and sex compatible. All the participants were included in the study detailed history, and a complete clinical examination. The study includes two-group (pregnant and non-pregnant) aged from 16-44 years, of different weight; height (which recorded) and different conception from 1st, 2nd and 3rd trimesters were included. The nature and the purpose of the study also it explained to each participant. **Results:** There was statistically significant difference of mean age between the groups. There was no statistically significant difference in BMI between two groups at p. value less than 0.05. **Conclusion:** There is difference in PEFR between the pregnant and the non- pregnant but no difference among the different trimesters of the different pregnancy. **Recommendation:** we recommend monitoring the peak expiratory flow rate also as an important parameter for small airway disease monitoring.

KEYWORD: PEFR, BMI, Expiratory.

INTRODUCTION

Although some workers have already studied the effect of pregnancy on pulmonary Function, but in my study I focused mainly on the difference between lung function in different stages of pregnancy particularly the changes in the expiratory flow rates. Giving birth to a child is a very precious event in the life of every woman. It is a time of celebrations in the family to welcome a new member.

The pregnant woman goes through various physical, mental, psychological & social changes.[1] Pregnancy is a normal but altered physiologic state that causes significant hormonal, mechanical, circulatory changes and respiratory changes. The respiratory changes is mainly due to the growing fetus. Which causes a mechanical impediment to the ventilation.[2] Pulmonary function test is one of the fundamental procedures used for evaluating the patient's respiratory status. The spirometer measured the efficacy of the lung to exhale and it records the amount and the rate that is breath in and out our lungs over a given time. Study the lung function during the pregnancy is necessary for better antenatal care and in fitness for general anesthesia. Dynamic PFTs are an important tool in the evaluation of the functional as well as fitness state of the respiratory system, also for the assessment of severity of illness. This knowledge help the physician to accurately interpret the different adaptive changes in the respiratory system in pregnant women and thus preventing any unnecessary or unneeded treatment for the physiologically changed respiratory functions misinterpreted as abnormal while comparing the same with before pregnancy values.[3] In addition, it is useful for following up the progression of preexisting lung disorder. Aims of this study to assess the effect of single normal pregnancy on expiratory flow rates.

Patients and methods: A cross- sectional analytical study was conduct in the unit of pulmonary function in association with the Department of Gynecology and Obstetrics, in Baghdad teaching hospital in Baghdad. The study consists of recording the Pulmonary Function Tests for 2 major groups of Iraqi female of child bearing age. Including 120 pregnant women of various phases of gestational period subdivided into 10 weeks (I trimester), around 24 weeks (II trimester), 37 weeks (III trimester) and control group of 40 non pregnant women of age and sex compatible. All the participants were included in the study detailed history, and a complete clinical examination. the study includes two group (pregnant and non-pregnant) aged from 16-44 years, of different weight, height(which were recorded) and different conception from 1st, 2nd and 3rd trimesters were included. The nature

and the purpose of the study also it explained to each participant. Physical examination done it to each participant especially regarding the cardiovascular and the respiratory system. The test was performing in the early morning hours (9 am to 12am). The test done it in calm conditions with subjects in sitting position according to ATS guidelines. Using master lab spirometer Jaegersn.(105052-175111:model 1998.germany). The pregnant and non- pregnant women did the procedure by their own agreement. The aim of the study is explain to them. Their written agreement also taken from each of the participant.

RESULTS

The base line data of the studied group (pregnant and the control group) is shown in table 1. There was statistically significant difference of mean age between the groups. There was no statistically significant difference in BMI between two groups.

Table 1: Difference between variables [BMI and age].

		Sum of Squares	df	Mean Square	F	Sig.
Age	Between pregnant and non- pregnant	1336.725	3	445.575	8.509	.000
	Within different trimester Groups of the same pregnancy	8169.050	156	52.366		
	Total	9505.775	159			
BMI	Between pregnant and non- pregnant	4.247	3	1.416	.090	.966
	Within Groups of different trimesters of the same pregnancy	2462.094	156	15.783		
	Total	2466.341	159			

In this table shows the results that the pregnant and the non- pregnant groups regarding their PEFR. There was statistically significant change between the pregnant and the non- pregnant but there is no change between the different trimesters of the different pregnancies.

Table 2: Difference between variables.

(I) state	(J) state	Mean Difference (I-J)	Std. Error	P value
non pregnant	first trimester pregnancy	17.650*	3.738	.000
	second trimester pregnancy	10.860*	3.738	.004
	third trimester pregnancy	13.770*	3.738	.000
first trimester pregnancy	non pregnant	-17.650-*	3.738	.000
	second trimester pregnancy	-6.790-	3.738	.071
	third trimester pregnancy	-3.880-	3.738	.301
second trimester pregnancy	non pregnant	-10.860-*	3.738	.004
	first trimester pregnancy	6.790	3.738	.071
	third trimester pregnancy	2.910	3.738	.437
third trimester pregnancy	non pregnant	-13.770-*	3.738	.000
	first trimester pregnancy	3.880	3.738	.301
	second trimester pregnancy	-2.910-	3.738	.437

In this table, shows the data were obtained from the pregnant and the non- pregnant groups regarding their PEFR. The mean and the S.D were recorded for each of the groups. As shown in table 3.

Table 3: Mean and SD for PEFR.

State	PEFR		N
	Mean	Std. Deviation	
non pregnant	77.6925	12.46104	40
first trimester pregnancy	60.0425	20.64305	40
second trimester pregnancy	66.8325	18.11178	40
third trimester pregnancy	63.9225	14.42828	40
Total	67.1225	17.81710	160

DISCUSSION

Statistically significant changes in PEFR between the pregnant, the non-pregnant, and no difference between the different trimesters of the different pregnancies. Our study suggests there is some natural course of changes in the peak expiratory flow rate that occurs during normal pregnancy. Two studies were compatible with our study, had found that the peak expiratory flow rate decreases during the normal pregnancy, one of these studies is done by HARIARH et al.[4] they explained their findings on mechanical causes such as enlargement of the gravid uterus and increase in the maternal weight during the pregnancy.

The other study done by PURANIK et al.[5] who measured the PEFR in the Indian pregnant women, found that there is decrease in the peak expiratory flow rate in the pregnancy and he explained this finding due to poor nutrition.

The same results were obtained from a study carried out by MEMON et al who found that peak expiratory flow rate and their percentage were significantly less in different trimesters of the pregnancy.[6] Previous studies had found that there is no changes in either Peak expiratory flow rate or forced vital capacity in one second during pregnancy suggesting that there is a fixed positive relation between these two values.

CONCLUSION

There is difference in PEFR between the pregnant and the non- pregnant but no difference among the different trimesters of the different pregnancy.

Recommendation: We recommend monitoring the peak expiratory flow rate also as an important parameter for small airway disease monitoring.

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