

ANTENATAL AND INTRANATAL BEHAVIOUR OF PREGNANT WOMEN IN RELATION TO THEIR RESPIRATORY PHYSIOLOGY AND SYMPTOMATOLOGY

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SUMMARY

Changes in respiratory physiology, silent or overt may have far reaching effects on the pregnant woman's behaviour during pregnancy, labour and pregnancy outcome. In a small series of 50 pregnant patients an attempt was made to find out the relationship between changes in respiratory physiology during pregnancy, Post Partum and symptomatology of patients during pregnancy and labour. Also attempt was made to study relationship between changes in respiratory dynamics and intranatal behaviour of patients. In this study it was found that symptomatology during antenatal period has a bearing on intranatal behaviour in a significant way. However, physiological changes in respiratory physiology are not related to symptomatology of the patients. When this change in lung volumes and capacities differ from regular change, behaviour of patient specially during labour may be different. However this is a small study and needs further in-depth studies.

Changes in respiratory physiology, silent or overt may have far reaching effects on the pregnant woman's behaviour during pregnancy and its outcome. Many pregnant patients complain of dyspnea, is a subjective evidence that these changes may have some clinical effect. The changes in respiratory dynamics seem to allow for an optimal environment for the mother and foetus. It has not been investigated in depth whether the respiratory physiology

of a pregnant woman has any effect on her symptomatology, ante and intranatally. We endeavoured to study the relationship between changes in respiratory physiology and symptomatology of pregnant women, and their effect on intranatal behaviour of normal pregnant women.

Patients were selected from antenatal clinic of department of obstetrics and gynaecology of MGIMS, Sevagram. Respiratory function tests were performed in department of physiology. Patients were neither obese nor smokers. They neither

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had any cardiorespiratory, haematological, skeletal disease nor any obstetric problems. They were between the age group of 20 to 35 years and were between their first to fourth pregnancy. They were put in two groups. Group I comprised of 25 patients who were booked from first trimester. In this group pulmonary ventilation tests were performed serially thrice during pregnancy at 12-16 weeks 24-28 weeks and 34-36 weeks and once after delivery within 7-10 days. Group II comprised of 25 patients who were booked in IIIrd trimester. In this group tests were performed once during pregnancy between 34-36 weeks and once after delivery between 7-10 days.

Complete clinical history was taken. Examination including body surface area, blood pressure etc. was done. Pulmonary ventilation tests were performed on a Benedict's Roth type recording spirometer using Renees charts. All factors timing, position etc. were kept constant in all patients. Lung functions included respiratory frequency (RF), Tidal Volume (TV). Inspiratory Capacity (IC), Expiratory Reserve Volume (ERV), Vital Capacity (VC), Maximum Voluntary Ventilation

(MVV) and Timed Vital Capacity (FRV).

TV, VC, IC and ERV prior to delivery and after delivery are shown respectively in Table I, II, III and IV (Table I, II, III and IV). Respiratory frequency after a rise in pregnancy had a fall after delivery. But there was no relationship of the changes in respiratory frequency to the symptomatology of the patients (Mean rise 4.1 excursion and fall 4.3). TV was found to be slightly higher in symptomatic patients. It was also found that patients with larger changes in TV had prolonged second stage of labour. In patient where there was gradual fall in VC rather than a rise later had forceps delivery for delayed second stage with maternal exhaustion. Similarly IC also fell in the patient who had a fall in VC. This patient had a larger fall in ERV. But there was no relationship of these changes to symptomatology of patients during pregnancy.

The incidence of maternal exhaustion was found to be 43.07% in symptomatic patients as compared to overall incidence of 20.5%, similarly incidence of forceps application was 8.85% as compared to 4% in asymptomatic patients.

TABLE - I
MEAN TIDAL VOLUME TV DURING PREGNANCY AND POSTPARTUM

TV at 12 16 weeks	TV at 24 28 weeks	TV at 34 36 weeks	TV at 7-10 days Post Partum		
Group I n = 25	Group I n = 25	Group I n = 25	Group II n = 25	Group I n = 25	Group II n = 25
298.8	346.8	390.4	374	294.8	289.2
±42.2	±53.7	±63.3	±51.5	±49.9	±52.2

TV - Tidal Volume in ccs.

TABLE - II
MEAN VITAL CAPACITY DURING PREGNANCY AND POSTPARTUM

Position of Patient	VC at	VC at	VC at		VC at	
	12-16	24-28 weeks	34-36 weeks		7-10 days	
	Gr. I n = 25	Gr. I n = 25	Gr. I n = 25	Gr. III n = 25	Gr. I n = 25	Gr. II n = 25
Lying	1844.64 ±216.97	1997.76 ±228.13	2132.84 ±316.4	1845.4 ±216.07	1888.8 ±273.2	1684.24 ±245.4
Sitting	1937.84 ±239.87	2052.28 ±223.74	2204.0 ±339.6	1938.96 ±223.8	1960.6 ±268.9	1784.9 ±245.4

VC = Vital capacity in cc
n = Number of subjects

TABLE - III
MEAN INSPIRATORY CAPACITY DURING PREGNANCY AND POST PARTUM

Position of Patient	IC 34-36 weeks		IC at 7-10 days	
	Gr. I	Gr. II	Gr. I	Gr. III
	n = 25	n = 25	n = 25	n = 25
Lying	1780.2 ±237.7	1544.8 ±183.6	1456.9 ±248.9	1306.9 ±216.7
Sitting	1690.8 ±233.8	1473.1 ±197.2	1305.7 ±212.4	1228.6 ±290.3

IC = Inspiratory capacity in ccs
n = Number of subjects.

TABLE - IV
MEAN EXPIRATORY RESERVE VOLUME DURING PREGNANCY AND POSTPARTUM

Position of Patient	ERV at 34-36 weeks		ERV at 7-10 days Post Partum	
	Gr. I	Gr. II	Gr. I	Gr. II
	n = 25	n = 25	n = 25	n = 25
Lying	352.2 ±150.3	300.56 ±102.2	472.6 ±144.9	371.4 ±108.2
Sitting	505.3 ±191.9	465.3 ±135.09	651.2 ±171.0	566.4 ±133.9

ERV = Expiratory reserve volume in cc
n = number of subjects

Discussion

Changes in the lung dynamics during pregnancy may be affecting antenatal, intranatal behaviour and pregnancy outcome. Those patients where the changes were different from that of general group had different behaviour specially during labour. In group I RF, TV, & VC, IC had a rise during pregnancy and a fall after delivery. In group II also there was significant fall in these parameters. But patients with a fall in VC, IC rather than a rise had maternal exhaustion and prolonged second stage and forceps application. It is possible that those patients who had respiratory complaint like dyspnea were more conscious of their respiratory effort and therefore harder as compared to asymptomatic patients. It has been suggested that sudden attacks of dyspnea and respiratory embarrassment in Pregnant women may be due to trophoblast travelling through uterine sinuses and reaching the alveoli of maternal lung. (Shelat 1969). Symptomatology of patients did play some role in modifying the behaviour of patient during delivery and mode of delivery. The incidence of maternal exhaustion, prolonged second stage of labour and forceps application was somewhat higher in the symptomatic women.

It appears that symptomatology of patients is not much dependent upon changes in lung volumes and capacities. Probably these symptoms are more due to embolisation rather than regular changes in the respiratory physiology. However in patient where there was a fall rather than a rise in VC and IC and VC, IC rose after delivery had forceps delivery for maternal exhaustion with prolonged second stage. This patient had more fall in ERV and later rise. Similarly higher rise in ERV

was in another patient of Group II. Similarly more mean rise in ERV after delivery as compared to fall from early months to later months signifies that probably all these changes start very early.

It was found that symptomatology during antenatal period has a bearing on intranatal behaviour in a significant way. However physiological changes in respiratory physiology are not related to symptomatology of the patients. When lung volumes and capacities differ from their regular change, behaviour of patient specially during labour may be different. However this is a small study and needs further in depth studies.

Conclusion

In this study it was found that symptomatology during antenatal period has a bearing on intranatal behaviour in a significant way. However physiological changes in respiratory physiology are not related to symptomatology of the patients. When this change in lung volumes and capacities differ from regular change, behaviour of patient specially during labour may be different. However this is a small study and needs further in depth studies.

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