

TOTAL VOLUME OF LIQUOR AMNII AT DIFFERENT GESTATIONAL PERIOD*

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The liquor amnii is a dynamic fluid. Its volume and composition change with the progress of pregnancy (Gillibrand, 1969; Roy Chowdhury *et al*, 1969; Touchstone *et al*, 1972). Elliot and Inman (1961) observed decrease of total amniotic fluid volume with the advancement of pregnancy. They also noted a mean volume of one litre of amniotic fluid in normal pregnancy at term. Guthmann and May (1930) found a mean volume of 1.8 litres. Charles and Jacoby (1966) in their extensive investigation in the determination of total volume of amniotic fluid stressed much upon the technique and method of amniotic fluid measurement. They observed wide variations in the total volume of amniotic fluid in various abnormal conditions of pregnancy. Employing dye dilution technique the total quantity of liquor at term as noted by Zwirek and Pitkin (1968) appears to give correct result as compared with

actual direct estimation. Upto the present time no method of amniotic fluid measurement has been found flawless and universally accepted. It is suggested that a simple, safe and accurate method of measurement of amniotic fluid would be of clinical value in normal and abnormal pregnancies. The total volume of liquor in Indian subjects in normal and abnormal pregnancies has not yet been reported.

Material and Methods

Hospitalised normal pregnant women of different age, parity and duration of gestation were selected for this investigation. The subjects were grouped into three categories, those belonging to 35 to 37 weeks of pregnancy as premature ones, 38 to 40 weeks as normal pregnancy and 41st week onwards as post-dated pregnancies. There were 10 subjects in each group. Amniocentesis was performed (De *et al*, 1969) and carefully 5 ml. of amniotic fluid was withdrawn in a sterile test tube. By changing the syringe 5 ml. of sterilised Evans Blue was introduced in the amniotic sac. By trial it was confirmed that mixing for 20 minutes was adequate to get constant result. The measurement

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was done following Neslen *et al.*, (1954) procedure. With adequate precaution it was a safe procedure in skilled hand and did not induce labour in any case in the present series.

of liquor at different gestational periods is further confirmed from present findings in Indian subjects. Although noted earlier no comment on such variation has as yet been made. It is suggested

TABLE I
Distribution of Cases According to Duration of Pregnancy

Experiment	No. of subjects	Volume of amniotic fluid: range in ml.	Mean
<i>Group I:</i>			
Normal pregnancy 38 to 40 weeks	10	985- 995 ml.	932.9 ± 56
<i>Group II:</i>			
Pre-term pregnancy 35 to 37 weeks	10	1120-1600 ml.	1246.3 ± 87
<i>Group III:</i>			
Post-dated pregnancy 41st week onwards	10	785- 930 ml.	828.2 ± 38

Results and Discussion

From the result it is evident that the volume of liquor varies at different gestational periods. Even in the same group of subjects variation in the total quantity has been noted. The variation in individual group can be attributed to difference in foetal size. The total volume as measured by Elliot and Inman (1961) in normal and pre-term pregnancy though not same was similar. They observed in normal pregnancy an average of 1000 ml. and in pre-term pregnancies, 1500 ml. whereas in our series the mean total volume was 932.91 ml. and 1246.3 ml. respectively. In post-dated group the total volume diminished to 828.2 ml. This diminution of volume of the fluid may be an additive factor in increasing the concentration of certain constituents during last few days of gestation. Variation in the total amount

that the relatively large quantity of amniotic fluid in pre-term pregnant individual is perhaps due to relative small size of the foetus and slow rate of absorption. In post-dated pregnancy similarly comparatively bigger foetal size may explain the diminution in the liquor content. It may also be the stress-condition in post-dated pregnancy causing liberation of aldosterone; sodium retention resulting in rapid absorption of water through amniotic membranes.

Our results further indicate the dynamic nature of liquor during the progress of gestation. The genesis and circulation of it are still obscure. Uptil now the specific physiological function of this dynamic fluid is not known. Examination of different constituents and volume may provide some clues for determination of the maturity and intrauterine status of the foetus.

Summary

1. Total volume of liquor amnii has been measured indirectly by Evan's Blue dye dilution technique on hospitalized Indian pregnant subjects.

2. Estimations are performed at different gestational periods in normal healthy patients of different age group and parity.

3. The patients were grouped into three groups as pre-term (35-37 weeks), normal (38-40 weeks) and post-dated (41 weeks onwards). The average amniotic fluid content in the three groups of patients were 1246.3 ml., 932.9 ml. and 828.2 ml., respectively. The values obtained are similar to other previous observations.

4. The possible cause of variation in the liquor content and its significance in clinical obstetrics has been discussed.

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