SOME AMNIOTIC FLUID CONSTITUENTS IN M.T.P. CASES

by

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Introduction

In recent years the biochemistry of the amniotic fluid has been a subject of increasing interest and study. But the normal value and trends of many constituents and their potential practical values are yet to be established with certainity. We have estimated the sodium, potassium, Chloride, Creatinine and sugar in amniotic fluid of MTP cases.

Material and Methods

Amniotic Fluid was collected prior to intraamniotic injection in 42 M.T.P. cases, with gestational age varying from 14 weeks to 20 weeks. The method of various ingredients estimated is given below:

Amniotic Fluid

Estimation	Method
(i) Sodium	Electrolyte
(ii) Potassium	
(iii) Clorides	
(iv) Creatinine	Alkaline picrate method
(v) Sugar	Folin wu method.

Results

Table I shows the results of these amniotic fluid analysis in 42 cases.

TABLE I
Amniotic Fluid Constituents
(Mean Value)

Duration of pregnancy weeks	No. of women	Meq/litre			mgms %	
		Na	K	Cl	Creatinine	Sugar
14	19	136	4.2	107.7	1.0	64
16	1	128	4.00	107.6	1.41	61
18	6	131	3.85	110.6	1.33	49.8
20	16	132	3.65	104.8	1.48	55.9

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Discussion

Amniotic Fluid consists of 98-99% water with 1-2% solids. About 50% of the solids are organic and of this 50% is protein. The inorganic components are similar to extracellular fluid with high

concentration of sodium, cloride and carbon dioxide and small amounts of potassium, calcium, magnesium and phosphates. According to Bolognese (1977) in the first half of pregnancy sodium and chloride concentrations of amniotic fluid are more similar to fetal than maternal serum suggesting that amniotic fluid may be an extension of fetal extracellular fluid. Later the fluid becomes progressively hypotonic with decrease in sodium and chloride values and corresponding fall in total osmotic pressure. Potassium values remain constant during pregnancy. Calcium magnesium, phosphorous, zinc, iron and sulphur show no significant change.

According to Hellman and Pritchard (1973) in the first half of pregnancy amniotic fluid essentially has the same composition as maternal plasma except for a much lower protein concentration. The osmolality of amniotic fluid decreases as gestation advances.

Whitefield (1978) has given the mean amniotic fluid sodium as 136 mmol/litre at 16 weeks and 132 mmol/litre at 34-36 weeks, that is, it shows continuous decrease to term..

Cassady and Barnett (1968) recently reported a study of fluid electrolytes and osmolality in relation to perinatal outcome. A linear decline in a fluid solutes (osmolality sodium and chloride) was associated with successful perinatal outcome.

Amniotic fluid glucose concentration is lower than maternal serum and decreases after the 32nd week as maturity approaches. An increase in maternal blood glucose is associated with a slight but significant rise in amniotic fluid glucose concentration. Substantially higher amniotic fluid glucose values are present in insulin dependent and untreated Class A diabetic gestation. (Significantly lower values are noted in pregnancies with placenta insufficiency (Drazancic *et al* 1974; Spellacy *et al*, 1973 and Bolognese, 1977).

We have estimated amniotic fluid creatinine values just to develop the confidence that amniotic fluid creatinine value is less than 1.5 mgms/24 hours in early pregnancy. It indicates the muscle mass and renal maturity of the foetus.

As the number of cases is 42 in all, the number is small when subdivisions per weeks of pregnancy are made and hence we have not tried to find the difference statistically in different constituents at different weeks. But a definite steady fall was demonstrated in potassium values.

In conclusion in midtrimester pregnancy the mean amniotic fluid values were sodium 128-136 meq/litre, potassium 3.65-4.2 meq/litre, chlorides 104 to 110 meq/litre, creatinine 1 to 1.48 mgms % and sugar 50 to 64 mgms/litre.

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