

ELECTROLYTE STUDIES IN BLOOD, URINE AND LIQUOR AFTER INTRA-AMNIOTIC INSTILLATION OF 20% SODIUM CHLORIDE

by

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Injection of 20% sodium chloride in the amniotic cavity is the most popular and commonly used method for terminating pregnancy in the second trimester. It is certainly cheap and moderately effective. Japan was the first to use hypertonic saline extensively and as many as 70 publications were out from Japan on saline abortions Wagatsuma (1965). Unfortunately, report of 18 deaths in Japan in 1949 and 1950 due to saline abortions put saline into oblivion for some time. Hypertonaemia is the most dreaded complication after use of hypertonic saline. It is surprising that very few studies are made on electrolyte changes after intra-amniotic injection of hypertonic saline. Easterling *et al* (1972) Ito (1954), Weingold *et al* (1965) are some of the workers who have studied the electrolyte changes. Most of these workers have studied electrolyte changes in blood and urine. We have tried to correlate electrolyte changes in blood, urine and liquor amnii after hypertonic saline.

Material and Methods

This is a study of 150 cases of second

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Accepted for publication on 19-8-75.

trimester abortions terminated by the use of 20% sodium chloride instilled intra-amniotically. The duration of gestation ranged from 15-20 weeks. These women had no associated medical disease. After doing amniocentesis per abdomen, enough liquor was aspirated to make sure that the needle was in the amniotic cavity. Withdrawal of 2-3 ml of liquor was enough to varify that the needle was well in place. Two hundred mililitre of 20% sodium chloride was then instilled with the bottle and the drip set. It took about 12-15 minutes to instill 200 ml. The Vinyl tubing was passed in the amniotic sac through the needle before withdrawing the needle. The catheter was fixed to the abdominal wall. Samples of Blood, urine and liquor were collected at 0, 2, 4, 6 and 8 hours. Sodium and chlorides were estimated in blood, urine and liquor.

Analysis and Discussion

There was no significant rise in serum sodium. The peak levels were reached within 4 hours and then declined. Easterling *et al* (1972) and Weingold (1965) report no significant change in serum electrolytes after hypertonic saline. Two saline deaths reported by Cameron and Dayan (1966) showed bloody tap in the first case and injection of 30% saline in the second case. There is certainly a great

risk of hypernatraemia if the liquor is blood stained or saline is injected too fast and under pressure. It is better to instill hypertonic saline by the drip method. With the syringe, there is a risk of injection with speed and under pressure. Ito (1954) however found significant change in serum chloride.

The urinary sodium reached a peak by 6 hours and then gradually declined. Easterling reports that urinary sodium increased at 6 hours and reached a peak in 27 hours. Easterling however has reported after studying only six cases. It is likely that excess sodium from the liquor is excreted in the urine fairly rapidly by 6-8 hours so that serum sodium levels are maintained at normal levels.

The sodium levels in liquor rise immediately after injection and reach a peak (nearly five times the preinjection level) by 2 hours and then gradually decline. However, the sodium levels after 8 hours are still high in the liquor. This suggests that all the sodium that is instilled in the liquor is very slowly removed from the amniotic sac. (Table I) (Graph 1).

The chloride levels in serum, urine and liquor run more or less parallel to the sodium levels. The peak and decline

occur at the same time. (Table II) (Graph 2).

There are difficulties in collecting liquor from the amniotic sac. We could collect liquor in all 150 cases at zero hour but the number of samples of liquor that could be collected at 2, 4, 6 and 8 hours were 146, 142, 138 and 138 cases respectively. In case there was difficulty in aspirating liquor, shifting the position of the patient or injecting one or two millilitres of air

MEAN CHLORIDE LEVELS

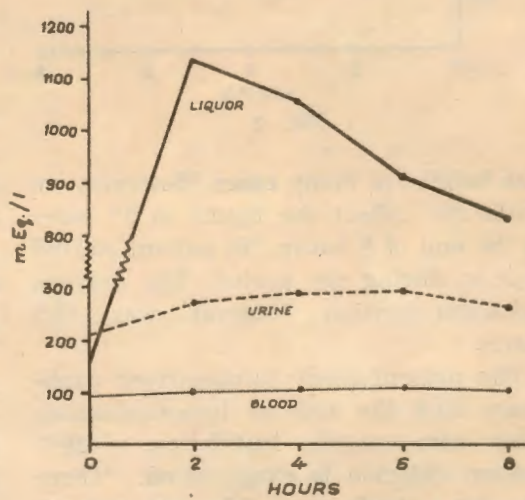


Fig. 1

TABLE I
Mean Sodium Levels (mEq./l)

Source	0 hour	2 hours	4 hours	6 hours	8 hours
Blood	142	144.4	145.6	145	144
Urine	356	392	441	464	400
Liquor	190	1150	1040	870	800

TABLE II
Mean Chloride Levels (mEq./l)

Source	0 hour	2 hours	4 hours	6 hours	8 hours
Blood	94	102	104	106	106
Urine	210	270	290	295	265
Liquor	145	1130	1055	910	830

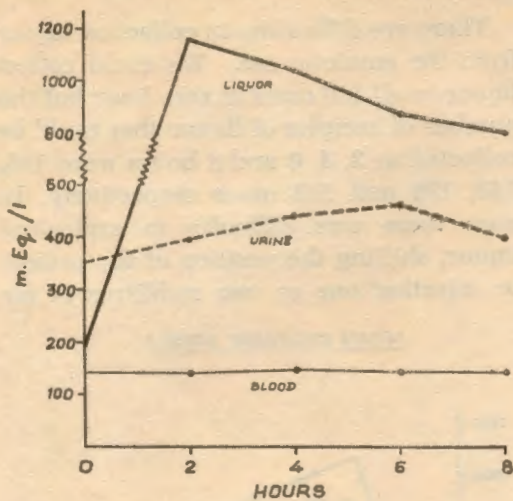
MEAN SODIUM LEVELS

Fig. 2

was helpful in many cases. However, we could not collect the liquor in 12 cases at the end of 8 hours. No patient started leaking during the period. The average induction-abortion interval was 23.5 hours.

The present study infuses fresh confidence that the risk of hypernatraemia after intra-amniotic instillation of 20% sodium chloride is exaggerated. There was not a single case of hypernatraemia in these 150 cases.

Newer drugs are developed to procure second trimester abortions. These are distilled water, urea, prostaglandins, etc. However, hypertonic saline has stood the

test of time and is cheap and effective method if properly used. Bloody tap should deter one from instilling hypertonic saline.

Summary and Conclusions

1. Sodium and chloride levels were studied in blood, urine and liquor in 150 cases of second trimester abortions performed after instilling 200 ml of 20% sodium chloride.

2. There is no significant change in serum sodium and chloride levels.

3. The urinary sodium and chloride rise and reached a peak by 6 hours and then declined slowly.

4. The sodium and chloride levels in liquor rose immediately and then slowly declined. However, even at the end of 8 hours, they were 4-5 times higher than normal.

5. The risk of hypernatraemia is exaggerated.

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