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The concentration of sodium and potassium as compared with that of calcium and magnesium in the serum of patients with active infantile tetany.

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We have determined the sodium, potassium, calcium and magnesium content of the serum of children suffering from active infantile tetany. As most of the infants were quite small it was only possible in a few cases to do the four determinations on the serum of the same individual. The results are given in Table I. It is seen that the sodium content falls within the limits of normal. The potassium content is apparently somewhat elevated. The concentration of calcium in the serum, as previously shown, is markedly diminished while that of magnesium is usually within normal limits.

	Sodium Mg. per 100 C.c.	Potassium Mg. per 100 C.c.	Calcium Mg. per 100 C.c.	Magnesium Mg. per 100 C.c.
1.........	324	25.0	5.6	2.2
2.........	330	26.7	6.2	1.6
3.........	337	19.0	6.6	2.1
4.........	323	24.8	5.8	1.7
5.........	322	28.4	5.0	2.9
6.........	324	26.0	5.2	2.4
7.........			3.5	
8.........			5.8	
9.........			6.3	
10.........			6.7	
11.........			6.0	
12.........			6.7	
Average....	327	24.9	5.8	2.1

The average concentration of these elements in the sera of normal children is singularly constant. The actual figures are as follows:

Calcium..........................	10 – 11	mg. per 100 c.c. of serum.
Magnesium......................	2 – 3	mg. per 100 c.c. of serum.
Sodium..........................	325 –345	mg. per 100 c.c. of serum.
Potassium......................	18.5– 20.5	mg. per 100 c.c. of serum.

The (Na + K)/(Ca + Mg) ratio in the normal infant is therefore

$$\frac{340 + 19.5}{10.5 + 2.5} = 27.6,$$

while in cases of active infantile tetany it is

$$\frac{327 + 24.9}{5.8 + 2.1} = 44.5.$$

If the calcium were to remain the same, the ratio would be 27.8. It is therefore evident that the change in the ratio of (Na + K)/(Ca + Mg) is due almost wholly to the decrease in the concentration of calcium.

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Serumtherapy of advanced botulism.

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In the course of a series of investigations designed for the purpose of establishing the path of absorption of botulinus toxin in guinea pigs, a number of animals were kept under ether for the purpose of surgical manipulation. It was observed that in such animals death following the introduction of toxin was greatly delayed. Whereas normal guinea pigs of 350 grams given 50,000 minimal lethal doses[1] of botulinus toxin intraperitoneally show symptoms of dyspnea in one hour and invariably die in about two hours, guinea pigs similarly injected but put under ether anesthesia for two hours as soon as dyspnea occurs (*i.e.*, one hour after the injection of toxin) will survive for four hours and by prolonging the period of anesthesia, the life of the animals can be correspondingly prolonged.

We thought that advantage could be taken of this delay in the rate of the progress of the intoxication under ether anesthesia to permit toxin antitoxin combination to take place. Two series of guinea pigs were given 50,000 minimal lethal doses of botulinus toxin per os. Guinea pigs thus fed show first symptoms of intoxication in about six hours and die in about twelve hours. After six hours the first series received antitoxin intravenously while the second series was given antitoxin in a similar manner but at the

[1] The minimal lethal dose used throughout this paper is the amount that is necessary to kill a mouse of 15 grams in less than four days by intraperitoneal injection.