

Following the injection of metrazol a seizure may or may not occur. Failure of an overt seizure to appear may be characterized by any one of the following EEG reactions: 1. Drop in the percent time alpha without the appearance of abnormal potentials and return to normal activity in a few seconds. 2. Appearance of abnormal potentials (potentials with a frequency of 3-6 cycles per second) with a slow return to normal after more than 45 minutes. 3. Larval seizure (outburst of a serial sequence of 3-6 cycle per second potentials) with a return to normal activity in less than 15 minutes.

The occurrence of an overt seizure is characterized by the following type of EEG activity:

1. During the latent period and through to the end of the second clonic stage there is continuous activity of a frequency of 30 cycles per second in the precentral region. Activity of a frequency of 10 cycles per second may be recorded from occipital leads during the latent period and the tonic stage. Occasionally activity of a frequency of 15-16 and 3-6 cycles per second may occur in motor-occipital leads during the latent period.

2. The post-convulsive relaxation period shows very low voltage random activity.

3. The recovery period is marked by a gradual increase in frequency from a predominating activity of 3 cycles per second to an activity of 6 cycles per second and finally a complete restoration of normal activity.

A prolonged reaction to the metrazol seizure has been observed. Immediately following the seizure the patient exhibited a disorientation as to time, person and place, which was accompanied in the EEG record by an almost continuous activity of a frequency of 3 cycles per second. The EEG showed a gradual return to normal after one week. This was accompanied by a similar clinical improvement.

10285 P

Prenatal Intestinal Movements in Anoxemia.

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The extent to which fetal gastro-intestinal movements occur normally in intrauterine life is unknown. However, we are led to believe that they are present because meconium passed at birth con-

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tains vernix caseosum derived from the amniotic fluid which the human fetus swallows in large amounts by the sixth month.^{1, 2} Carlson and Ginsburg³ recorded vigorous and frequent hunger contractions in puppies delivered 8-10 days prematurely and direct observations of "spontaneous" fetal intestinal movements have been made by Yanase,⁴ and others.⁵⁻⁹ Asphyxial conditions prevailed in the latter instances except when viable fetuses near term were used.

We have observed directly and recorded in motion pictures intestinal activities in fetal cats and in kittens one and 2 days after birth. Fetuses were delivered by Caesarian section performed on animals previously decerebrated under ether by tying internal carotid and basilar arteries. This made it possible to dispense with anesthesia. Fetuses were first examined with the placental circulation intact in a constant temperature bath of Locke's solution. Later the umbilical cord was clamped or the placenta disengaged from the uterus. Local procain anesthesia was used for the young kittens. We tried to evaluate the part played by anoxemia in influencing fetal gut motility and had available blood-oxygen determinations made in the same specimens and in litter mates as well as in the mother cats by the Van Slyke and Neill method.

Local constrictions of the intestinal wall were induced by mechanical and faradic stimulation in cat embryos 18.5 mm long weighing about a gram. "Spontaneous" movements were seen in specimens of 35 mm (3 g) at about the middle of gestation. Strength of intestinal movements increased rapidly from then on and by 70 mm (18 g) the behavior of the stomach and intestines appeared to be no different from that in unanesthetized kittens a day or two old (110-120 g).

All specimens studied were subject to some anoxemia under the conditions of the experiments even though the placentas were intact and umbilical vein blood was fairly red. Approximately 50-60% saturation with oxygen (8-9 vol %) was never exceeded in the umbilical vein blood.¹⁰ It was determined that rhythmical fetal

¹ de Snoo, K., *Monatschr. f. Geburtsh. u. Gynäk.*, 1937, **105**, 88.

² Ehrhard, K., *München. med. Wchnschr.*, 1937, **84**, 1699.

³ Carlson, A. J., and Ginsburg, H., *Am. J. Physiol.*, 1915, **38**, 29.

⁴ Yanase, J., *Pflüger's Arch.*, 1907, **117**, 345; *ibid.*, 1907, **119**, 451.

⁵ Preyer, W., *Specielle Physiologie des Embryo*, 1885.

⁶ Friedman, M. H. F., *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **34**, 495.

⁷ Tani, K., *Jap. J. Obstet. and Gynec.*, 1927, **10**, 2.

⁸ Inada, N., *Fukuoka Acta Med.*, 1928, **21**, 596.

⁹ Koshtoyantz, C. S., and Mitropolitanakaya, R. L., *Fiziol. Z.*, 1934, **17**, 1309.

¹⁰ Steele, A. G., and Windle, W. F., *J. Physiol.*, 1939, in press.

respiratory movements occurred when the average oxygen content was 6.5 volumes %; these specimens showed active digestive type of peristalsis. It was found, on the other hand, that fetuses were apneic when the average oxygen content was 2.1 volumes %; the amount of propagation in intestines tended to decrease in apneic fetuses but rhythmical segmentation persisted. It would seem, then, that fairly normal intestinal motility is compatible with marked anoxia in cat fetuses. That gut movements would have been as vigorous and frequent or that they would have occurred at all had better oxygenation prevailed we cannot say.

When the fetuses were deeply depressed and in the asphyxia following interruption of the placental circulation, the tonus of the intestines diminished and agonal, pendulous, writhing movements appeared. Similar activity was induced under profound asphyxia in the newborn kittens.

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Cure of Microcytic Hypochromic Anemia in Dogs with Crystalline "Factor I."

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Severe microcytic hypochromic anemia developed¹ when puppies were fed a purified casein diet apparently deficient only in factor I (rat antidermatitis factor, vitamin B₆). This anemia was cured by addition to the diet of a concentrate prepared from rice bran containing the missing factor. Knowledge at that time did not justify the conclusion that the material in rice bran extract which cures rat dermatitis is identical with the substance that cures anemia in dogs. This has now been shown to be the case by use of crystalline factor I.

The basic diet of 3 adult dogs¹ was supplemented daily with 0.05 mg of thiamine per kilo, 60 micrograms of crystalline riboflavin per kilo, 4.0 cc of liver extract 1A containing factor II (chick antidermatitis factor) per kilo,¹ 15 mg nicotinic acid, and halibut

¹ Fouts, P. J., Helmer, O. M., Lepkovsky, S., and Jukes, T. H., *J. Nutrition*, 1938, **10**, 197.