

A study of the weights of litters at birth shows no relationship between these figures and the number of young in a litter. In the surviving group two litters of 13 have been cast, weighing 73 and 78 gm, respectively; one litter of 16 weighed 91 gm. In the group which failed to survive, litters of 13 and 14 young were also cast. Here, however, the weights were uniformly lower.

Another aspect of this problem which we consider of great importance concerns the ability of the young rat to survive the first three days after birth. We observed that while some young survived as long as 12 days, the majority were eaten by the mothers or died by the third day of lactation. Of 46 litters in which young failed to survive, 29 litters failed to survive the third day of lactation. This is a critical period in the life of the young rat. Deaths during this period should not be classified as lactation failures. We believe the causes of such failures can be traced to the reproduction process.

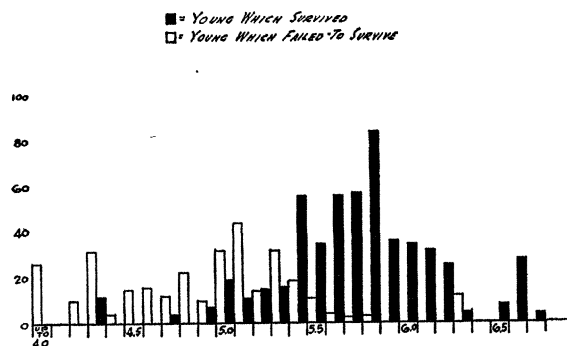


FIG. 1. Distribution of young according to birth weight.

The weights of the young at birth, coupled with survival data, can be used to show the adequacy of diets. For example, 27 litters were cast on the stock diet. The young in 4 litters failed to survive. Birth weights of these young fell in and below the critical range. On the unsupplemented diet, R-5a, 7 of 10 litters cast failed to survive. The young in only 1 of these 7 litters had birth weights above the critical range and represent a litter which we would normally expect to be weaned.

It appears that, regardless of diet, the survival of newborn rats is dependent largely upon their weights at birth. In our opinion, a diet which is qualitatively adequate in all respects for reproduction will also be adequate for lactation. Our results indicate that there are no dietary factors which are necessary for lactation only.

We propose that, in studies on rats, the weights of the young at birth be used as the first indication of the adequacy of a diet, and further, that lactation success in rats be calculated on the basis of those young and litters surviving on the third day of lactation.

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## The Spinal Anaesthetic Effects of Ephedrine Sulfate: A Preliminary Report

J. EUGENE RUBEN, PATRICIA-MARY KAMSLER, and  
W. LYALL HOWELL, JR.

Department of Anaesthesiology,  
Philadelphia General Hospital

The addition of ephedrine to spinal anaesthetic mixtures for the purpose of prolonging spinal anaesthesia is now a rather common practice (1). Except for the work of Schultz (2), who found that ephedrine was a spinal anaesthetic in frogs, this action of the drug has not been investigated. For this reason we have tested ephedrine for its spinal anaesthetic properties by injecting it subdurally prior to giving spinal anaesthesia and noting the resultant anaesthetic effects. This constitutes a preliminary report of our findings.

Fifty mg of ephedrine sulfate in triple-distilled water was mixed with 1 cc of spinal fluid. The mixture was slowly injected into the subdural space through a lumbar puncture over a period of 1-2 min. For 20 min after the injection, the patients were tested for loss of pin prick sensation and of anal sphincter tone. Effects were usually noted after 10 min or more, and were most frequently seen in the area supplied by the second, third, and fourth sacral nerves. Some loss of sensation was noted as high as the eighth dorsal cutaneous segment.

All of the 15 patients given ephedrine subdurally showed some diminution of pin prick sensation which varied from slight hypesthesia to anaesthesia. Anal sphincter tone was sufficiently diminished to admit two or more fingers without discomfort in 6 of the patients who were tested for this. No other paresis was seen.

None of the patients showed such systemic effects of ephedrine administration as elevation of pulse and blood pressure. Many exhibited the warming of the lower extremities associated with lumbar sympathetic nerve paralysis, and a few showed the drop in blood pressure often seen in spinal anaesthesia.

In some cases ephedrine anaesthesia was adequate for operation without the addition of a standard agent. An example of this was the 43-year-old woman with diabetic infection of the foot. Two toes were amputated and extensive incision and drainage of the foot was done under the spinal anaesthesia produced by 50 mg of ephedrine. The patient was not excessively sedated, responded accurately to questions, and cooperated well. When questioned later, she said that she had felt the operation but had had no pain.

The anaesthetic effect of ephedrine should be considered when adding this drug to spinal anaesthetic mixtures.

#### References

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