

Brief Communication

NOREPINEPHRINE INDUCED HYPOCALCEMIA IN SHEEP

Increased plasma levels of non-esterified fatty acids (NEFA) may lead to several physiological changes e.g. increased insulin secretion with a concomitant reduction of blood glucose, decreased glucose utilization in heart and skeletal musculature and increased blood acetone levels. High NEFA levels also cause fat infiltration in various organs especially the liver. Recently *Akgün & Rudman* (1969) showed that ACTH induced NEFA mobilization in rabbits was followed by hypocalcemia. Serum calcium decreased about 30 %, while the calcium content in adipose tissue increased up to 1000 %. This finding could also be verified in vitro. When adipose tissue was incubated in serum containing lipolytic hormones, lipolysis was stimulated and there was a shift of calcium from serum to tissue. A negative correlation between serum calcium and NEFA in hypocalcemic cows was reported earlier (*Luthman & Jonson* 1969). The purpose of the present investigation was to study the effect of increased NEFA levels on serum calcium in sheep. The animals used were ewes in late pregnancy. Lipolysis was stimulated by norepinephrine (Norexadrin, Astra). The animals were given a continuous intravenous infusion during 8 hrs. at a rate of 1 µg/kg/min. The methods of analysis were the same as described before (*Luthman & Jonson*).

Results

In all animals NEFA reached very high levels, while there was a sharp decrease in serum calcium. Fig. 1 shows the mean changes in two animals. The animals lay down and were unwilling to rise. The hypocalcemia may be explained in at least two different ways. The increase in NEFA may have caused a shift of calcium from the extracellular fluid into the adipose tissue as discussed above. It may also be possible that norepinephrine released thyrocalcitonin from the thyroid gland. *Barlet*

(1969) described a thyrocalcitonin releasing effect of glucagon. Further research is needed to clarify the hypocalcemic action of norepinephrine.

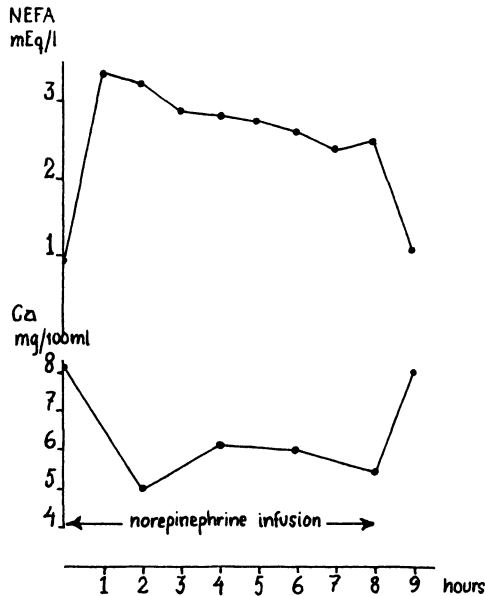


Figure 1. Changes in serum calcium and NEFA during norepinephrine infusion. Mean of two animals.

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(Received March 28, 1970).