The effects of vasopressin, adrenaline and noradrenaline on the mouse foetus.

J. DAVIES* and J. M. ROBSON†, *Department of Pharmacology, Guy's Hospital Medical School, London, S.E.1.*

The effects of vasopressin (Pitressin) on the mouse foetus have been investigated following intra-amniotic injections (0·1–5 m-u.) into 15- or 16-day pregnant mice. Many of the foetuses surviving the effects of such an injection were abnormal when examined 1–4 days later. The abnormalities consisted of haemorrhagic lesions of the foetal extremities (limbs, tail, tongue and snout) and this was followed by necrosis and sometimes by congenital amputation of the extremity distal to the necrosis. The extent and location of the lesions depended on the dose of vasopressin administered: relatively low doses (for example, 0·1m-u.) affected the digits, while larger doses affected the whole limb, tail and snout in that order.

Adrenaline (5–10 μg) and noradrenaline (5–10 μg) produced effects on the foetus similar to those of vasopressin (0·5–1 m-u.), whereas isoprenaline (10 μg), 5-hydroxytryptamine (10 μg) and oxytocin (Pitocin, 5 m-u.) had no deleterious effects on the foetus when given by intra-amniotic injection.

The response of the foetal limb blood vessels to vasopressin, adrenaline and noradrenaline and the development of haemorrhages in the limbs was then observed directly under a dissecting microscope in the transilluminated foetuses of anaesthetized mothers. Subcutaneous injections of vasopressin (10–100 μ-u.), adrenaline (0·1–1·0 μg) and noradrenaline (0·1–1·0 μg) into the foetus produced intense arterial constriction in the foetal limbs with accompanying stagnation of blood in the limb veins. Following an intra-amniotic injection of 1 m-u. vasopressin, this arterial constriction persisted for at least 3 hr. After 4 hr, the distal branches of the main limb artery were still intensely constricted and haemorrhages appeared in the limb at the sites of bifurcation of the main limb artery proximal to the constriction. Similar results were obtained with intra-amniotic adrenaline or noradrenaline (5 μg).

These results indicate that prolonged and intensive arterial vasospasm is probably responsible for the production of haemorrhagic lesions in the foetal extremities. It is possible that as a result of prolonged vasoconstriction, ischaemic injury of the limb blood vessels and supporting tissues occurs. Thus, when the main limb artery proximal to the sites of bifurcation begins to relax, while marked constriction of the distal branches of this vessel is still present, a rise in pressure occurs in the damaged vessel, causing it to rupture at its weakest point (the sites of bifurcation).

*Present address: Department of Pharmacology, School of Pharmacy, University of London, 29/39 Brunswick Square, W.C.1.

†Present address: Department of Pharmacology, Chelsea College, Manresa Road, London, S.W.3.

An attempt to determine whether acetylcholine can release acetylcholine from a sympathetic ganglion.

D. A. BROWN*, J. V. HALLIWELL, K. B. JONES and J. P. QUILLIAM, *Department of Pharmacology, St. Bartholomew's Hospital Medical College, London, E.C.1.*

It has been suggested by Koelle (1961) that, in sympathetic ganglia, the acetylcholine initially released by the preganglionic nerve impulse acts principally on the presynaptic terminals, to liberate a further charge of acetylcholine which then effects synaptic