LETTERS TO THE EDITOR

Heparin and Anaphylaxis

SIR,—It has been suggested that experimental anaphylactic shock may lead to vascular damage with thrombus formation notably in the rabbit (Sanyal and West, 1958; Waalkes and Coburn, 1959), and thus it seemed probable that some of the manifestations of this phenomenon may be ameliorated by pretreatment with anticoagulants. The methods for sensitisation and challenge were those previously described (Sanyal and West, 1958a, 1958b). In the rat, dog and the guinea-pig, administration of 5,000 I.U. of heparin per kg. weight, 30 min. before challenge did not modify the production of anaphylactic shock. In the rabbit, however, such a treatment afforded considerable protection against development of anaphylactic shock. In a series of 18 sensitised animals, 14 animals died within 15 min. after the injection of the challenging dose. In a series of 12 animals similarly sensitised, but injected with heparin as above, on challenge one animal died within this period; another died in 6 hr.; the rest survived.

The mechanism of the protective action of heparin has also been studied in this species. An action on antibody formation is excluded on theoretical grounds, inasmuch as heparin was given a short time before challenge. Heparin pretreatment did not prevent passive transfer of antibodies to guinea-pigs, nor did heparin prevent precipitin reaction *in vitro*. The uptake of antibodies by the virgin guinea-pig uterus *in vitro* was not modified in presence of heparin. Histamine and 5-HT have been suggested to be the two chief mediators of anaphylactic shock in this species; however, the antihistamine or anti-5-HT action of heparin was minimal. It was found that the histamine and 5-HT content of the lung tissue is raised after anaphylactic shock in this species (Sanyal and West, 1958b). In heparin pretreated animals, this rise was absent, either there was no change in the values or there was a slight reduction.

This action could be explained by the well-known anticoagulant action of heparin, as this rise is said to be due to formation of thrombus in the lung field.

It was also seen that during anaphylactic shock characteristic changes occurred in the ECG indicating disturbances of the coronary circulation (Mikulich, 1951)f Pretreatment with heparin did not prevent the almost immediate depression o- the S–T segment, and alterations in the shape of T-wave, but whereas in heparin. treated animals these changes were transient and passed off within 5–10 min., in the control group undergoing anaphylaxis the changes persisted for several hours in animals which survived. The earlier changes might be due to spasm of the coronary arteries (Mikulich, 1951) but if the later changes are supposed to be due to thrombus formation, as has been suggested for pulmonary circulation, the absence of delayed effects in heparin-treated animals is easily explained.

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