Selected Articles.

ON THE PATHOLOGY OF RENAL DROPSY.

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The pathology of dropsy, and of renal dropsy in particular, has excited considerable interest and discussion since the experimental inquiry which is chiefly associated with the name of Cohnheim.

With respect to the œdema of hydræmia, Cohnheim, and with him Lichtheim, found in their experiments that a simple hydræmia or even hydræmic plethora was insufficient for its production. It was necessary that a change in the capillary wall of a paralytic nature be superadded, tending in all probability to cause a loosening of the attachments of the endothelial cells of which it is composed. In one experiment, Cohnheim and Lichtheim ligatured the iliac vein of a dog, yet this was not followed by œdema of the corresponding limb. Ranvier repeated the experiment, and in addition divided portions of the sciatic nerve. It was found that while section of the motor fibres of the nerve gave negative results, section of the vaso-motor fibres was followed by œdema of the limb. Salvioli obtained similar effects in dogs rendered artificially hydræmic. With respect also to the lymphatics, it is found that their complete occlusion is, at least for a time, unattended by œdema of the pertaining parts. In another experiment Cohnheim depleted a dog, and injected salt solution till hydræmic plethora ensued. The result was a great increase of the natural secretions—e.g., saliva, bile, urine, and intestinal fluid; but not until the hydræmic plethora was of the most extreme kind was any dropsy manifested, and then in the form of ascites only. Not only so, but Fleischer, after tying the ureters and adding urea to the injected liquid, failed to obtain anasarca, nor was the blood pressure permanently raised.

On the strength of these and such like experiments Cohnheim came to the conclusion that dropsy occurring in the human subject was caused not so much by a hydræmia or hydræmic plethora, as by a morbid alteration in the walls of the capillaries favorable to an increased transudation of their fluid contents. This alteration he considered to be due to the direct action of a particular poison existing in the blood, the nature of which is problematical, but defined by some in the case of renal dropsy as the same specific agent which effects the kidney. It is, however, suggested by Brunton that it may be sarco-lactic acid, which, in conditions of imperfect oxygenation, may be formed instead of carbonic acid, he and Cash have discovered that the addition of dilute acids to the blood not only causes increased permeability of the vessels, as observed by Gaskell, but also œdema of the surrounding tissues. In reference to this question, it may be said that, apart from inflammatory conditions, there is but scant evidence to maintain the proposition that the existence, and even the prolonged existence, of a poison in the blood has any direct influence in the production of dropsy. Were it so, this symptom would be much more frequent, and at the same time much less significant, than it really is. Quite an exceptional instance, however, is found in the case of arsenic, which causes an œdema of obscure origin said by Feitelber to be the outcome of defective oxygenation. It could hardly be justifiable to adduce the malignant œdema of Koch in this connection, which is due to the action of a bacillus, though Bienstock, indeed, states that a somewhat similar organism can be cultivated from the fæces of man. On the other hand, there can be no doubt whatever that there are poisonous substances which by reason of their deleterious action on the blood act as remote causes in the production of dropsy. This is well illustrated in the case of the œdema of chlorosis, there being every reason to believe that this cachexia is intimately related to the absorption of ptomaines and leucomaines from the stomach and intestinal tract, as declared both on pathological and clinical grounds by Bouchard, Duclos, Sir Andrew Clark, and others.

Again, with respect to the locality of the œdema it is found in disease, and especially in renal disease, that hydræmic plethora is chiefly associated with symptoms the very reverse of those occurring in Cohnheim's experiment—with œdema, namely, of the skin and superficial tissues of the body, and with a diminution of the natural secretions and excretions. Pathologists have been much troubled over this very decided though instructive contrast, for the explanation of which various opinions have been advanced. Cohnheim himself supposed the skin in renal disease to be in a morbid state, its vessels debilitated, and more susceptible to the action of the poisonous agent which he believed to exist—a condition which, indeed, demonstrably obtains in the case of scarlatinal dropsy. Coats, commenting on this, imagines that a special vulnerability of the skin, is, from its pathological relationship, to be apprehended in kidney disease, and he further considers it probable that it is injured by the same irritant which attacks the kidney. Hamilton, in his search for an explanation, goes almost the length of contradicting himself. He believes the œdema to be induced by a long-continued stretching of the skin, for the production of which there was not sufficient time in the experiments on dogs, and yet elsewhere he states truly that the superficial œdema commences where the tissues are very lax. The most striking negation of the theory that the œdema of the skin is owing to a special