RENAL CALCULI.*

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In the comparatively brief time allotted to readers of papers before this Association, I propose to discuss the subject of renal calculus, first as to its causes and then briefly indicate the line of treatment I have found most beneficial in my own practice. In order to show that the subject is one of great importance and well worthy the serious consideration of all members of the medical profession, it is only necessary to recollect that forty-seven per cent. of all infants whose kidneys have been examined were found, according to Ebstein, to present evidences of uric acid infarctions, and it is also a well known fact that more than ninety per cent. of all cases of stone in the bladder have originated in a small concretion that had passed down from the kidney.

Several theories have been advanced to account for the formation of renal calculi, such as the catarrhal, the gouty, the diathetic, etc. By those who believe in the purely diathetic origin of calculi it has been argued that there are three diatheses, viz.: the urate, the oxalate and the phosphatic, one of which was the cause of renal stone in any given case. My own opinion is that with some rare exceptions the formation of primary kidney stone depends upon a predisposing cause which may be called the uric acid diathesis, and certain exciting causes incident to the food and surroundings of the individual, together with a precipitating cause without which stone is not deposited. The exciting causes determine the particular variety of calculus which may be found in any given case, but in the absence of the other two factors the exciting causes will not result in calculous deposit.

The mere presence of the diathesis alone will not cause the deposit of stone, for many persons habitually pass large quantities of uric acid without the development of any form of calculus. Ultzman has demonstrated that when the urine is only mildly acid, uric acid is deposited in normal rhombic prisms, but that if the acidity be increased the crystals take the form of elongated, pointed and radiating rods, and that it is precisely these spiny crystals that are found in cases of calculous pyelitis. Dr. Ord shows experimentally that the form in which uric acid is deposited is often determined by the other urinary constituents. Eichorst cites a case where a gentleman invariably passed several uric acid concretions after drinking moderately of wine, and I have had under my care for some time a patient who is regularly attacked with renal colic during pregnancy, but at no other time.

Persons who are exposed to the same influences and who are similarly nourished, always have the same character of kidney infarction. Thus in the fœtus and young infants, whose nourishment and surroundings are measurably the same, none but uric acid infarctions are found, but the conditions as to food and surroundings being changed other forms of deposit take place.

It would appear that dyspepsia has a considerable effect in determining the occurrence of calculous disease, hence those of sedentary habits are oftenest affected. A purely vegetable diet also seems to tend to the production of stone, and it is admitted by almost all authors that malt liquors have the same effect. Although not proven it is highly probable that diet has a considerable influence in the production of calculi. Cheshire, England, is almost exempt and the people live largely on a mixed diet, into which milk enters in no small amount, whilst Norfolk, with a population of between 400,000 and 500,000 has annually as many cases of calculous disease as the whole of Ireland, where milk also enters largely into the food of the people. Mr. Cadge believes that the great prevalence of stone in Norfolk is to be to a great extent accounted for by the inadequate supply of milk and to the universal prevalence of beer drinking. He is also of opinion that the effect of accumulated hereditary predisposition, in other words diathesis, is a factor entering largely into the causation of lithuria.

It is a doubtful question whether or not water containing lime salts favours the production of stone. My own limited experience would tend to support the opinion that water from limestone rocks has a tendency towards the production of renal stone. I have found that in the county of Wellington, along the Grand River, which runs through limestone rocks, calculous affections are comparatively common, so much so indeed that I rarely find myself without one or more patients suffering from calculous disease. I am at a loss to account for this prevalence of such disease on any other

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