

fact, rheumatoid arthritis may become, by reason of the pain and crippling to which it gives rise, one of the most horrible diseases with which a patient can be inflicted.

We must now consider what is the nature of the change in the joints that gives rise to these symptoms, and we will first recall some points in the anatomy of a joint.

For our purpose a joint may be taken as any place where one bone has to move on another. Now it is obviously essential that this movement shall take place as quietly as possible, or, in other words, with the minimum of friction between the surfaces of the bones which are in contact. Were we dealing with a joint in a piece of machinery—a bicycle, for instance—we would gain this end by frequently oiling the inside of the joint or bearing, and in man the same thing occurs. The surfaces of the bones are covered with a thin membrane called the synovial membrane, which is constantly secreting a thick oily fluid, which serves to keep the bones from grating as they move.

Then a joint has to stand the jarring and shock of sudden movements, so the ends of the bones are covered with pads of gristle, which are known as the articular cartilages. Round the whole joint is wrapped a tough covering, which serves to keep the bones in place, and is known as the capsule.

In rheumatoid arthritis the changes begin in the articular cartilages, which become softened and rubbed gradually away by friction between the bones, so that ultimately the latter are laid bare and so grate on each other as they move, and the movements are painful because there is no cartilage left to deaden and absorb the shock.

At the same time as the centre of the cartilage is being worn away, the edges, where the pressure is less, become thickened and develop outgrowths somewhat like mushrooms in shape, which ultimately become bony, so that the joint comes to be surrounded with a bony ring, and movement is thus restricted. In time the joint becomes locked and movement is impossible. The synovial membranes also wear away, so that lubrication is deficient, and every movement of the joint is grating and painful. The capsule round the joint is thickened also, and any nerves that may happen to run close to the joint are apt to be involved in the thickening, and to be compressed by, or enclosed in, the bony out-growths; this accounts for the extreme pain which is a prominent feature of so many cases.

When we come to investigate the cause of these changes we are on much more difficult ground, because we really know

very little about the matter. There are two theories. One is that the disease is due to some affection of the central nervous system, whereby the cartilages are not supplied with sufficient blood, or else they are not able to make a proper use of the blood they do get. In other words, something is wrong with the impulses or message that are sent from the brain to the affected joints. This theory is supported by the fact that changes in the joint much resembling those found in rheumatoid arthritis, take place in some cases of undoubted nervous disease.

Latterly, however, a different view has been gaining ground—namely, that the joints are badly nourished because the blood contains poisonous substances, which are either formed by germs of some kind, or more probably result from improper digestion of the food in the intestine. In fact a history of previous indigestion or of improper feeding of one kind or another can be obtained in a very large number of cases. This theory explains the occurrence of the disease amongst the very poor who have had for years food that is deficient in quantity and of an unsuitable kind. Various microbes have been found in the fluid in the affected joints, but, so far, none of them have stood the test of being the cause of the condition—namely, that the disease shall be reproduced when they are injected into an animal. Really it is greatly to be wished that more research work could be done on the pathology of rheumatoid arthritis, as it causes as much misery as many other diseases for which experimental work has done very much, and has enabled us to considerably alleviate.

As I have pointed out, the treatment of rheumatoid arthritis is largely a question of expense. For people who can afford it, a course of hot air baths and massage of the affected joints is often very beneficial, but they only relieve and do not cure. Still, if the patient can manage to spend the greater part of his time in constantly attending to his joints he may live in comparative comfort, especially if he can move about well enough to go abroad to a warm, dry climate for the winter. For those who cannot afford courses of baths and massage, hot fomentations at night are often useful, and may relieve the pain somewhat, and a little can be done towards diminishing the stiffness by rubbing the affected joints with a liniment of belladonna, but these measures often fail completely.

The question of diet is, however, of importance, as it is usually essential that the patient should eat as much easily digestible food as he can, and stimulants taken with meals are often

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