Original Communications.

THE PATHOLOGY, DIAGNOSIS, AND TREATMENT OF CARDIAC DISEASES.

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VI.—TREATMENT OF PERICARDITIS. GENERAL REMARKS; BLEEDING; MERCURY; OPUS; GENERAL AND LOCAL TREATMENT; PARAECACTIS OF THE PERICARDIUM; PERICARDIAL ADMISSIONS.

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THE treatment of non-rheumatic pericarditis requires no special consideration. The treatment is mainly that of the particular disease with which it happens to be associated.

Pericactysis of the Pericardium has been recommended and practiced in cases where there are recent collections of fluid in the pericardium, and have resisted the ordinary methods of treatment employed for promoting their absorption. The results of the operation in the limited number of cases hitherto performed cannot be considered as satisfactory, but it must be admitted that no just conclusions as to its real value can be drawn from them, for they were cases in which the effusion was excited and maintained by the presence of tubercular or carcinomatous disease, in which the lungs and pleura were of necessity previously damaged, and in which, therefore, a permanent cure was not to be expected.

The operation, as far as we can judge of it, in the present case, does not appear likely to be productive of any injurious consequences, if carefully performed; and the only objection to its use, in such cases, seems to be, that it holds out no hope of permanent benefit. But there are cases, undoubtedly rare, in which I should not hesitate to recommend its performance—cases, for instance, in which a large quantity of fluid has been rapidly exuded into the pericardium, and, by its mechanical pressure upon the heart and lungs, seriously interferes with their actions. The simple puncture of the pericardium, inflated and distended with fluid, can hardly be considered, under such circumstances, as even so important an operation as puncture of the pleura. It must be admitted, however, that in the acute and early periods of the pericarditis, the absolute necessity of the operation of the operation can with difficulty be shown. In one case, in which I contemplated the performance of the operation, I found the patient, on the following day, so much recovered as to render its performance inadmissible.

Still I am inclined to think that the operation was called for in the following case. The patient had been ill four or five weeks, and died at last furiously maniacal. Here, during life, extensive dull percussion had been observed across the front of the thorax. After death, the pericardium was found distended with three pints and a quarter of yellow lymph, and stretched twelve inches across the thorax; the pericardial surfaces were covered with false membrane. There was no other disease whatever to account for death. The lungs were remark-

ably compressed upwards and backwards by the pericardial effusion, but were otherwise perfectly healthy. The following case, recorded in the seventh volume of the Pathological Transacti"}

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palpitations, etc., quietly disappear, and the patients after a time leave the Hospital, with the belief that they are cured of their disease. Then, once more they return, as they must, to their former labours, and once more these labours, and the other attendant circumstances of their condition, provoke the rapid recurrence of the evils, which they vainly hoped they had for ever left behind them, when they quitted the Hospital. From such persons prognosis has nothing favourable to offer.

THE PHYSICAL CONDITION OF THE MUSCLES DURING MYALGIA.

By Thomas Inman, M.D., Physician to the Liverpool Royal Infirmary.

In a series of short papers, and at greater length in a book, I have endeavoured to call the attention of the profession to the fact, that a vast number of symptoms once supposed to indicate inflammation of internal organs, rheumatism, neuralgia, hysteria, and a variety of other diseases, are due in reality to partial affections of the fleshly or tendinous parts of muscles.

The main points established are, that whenever muscles have been excessively used (proportionally to their strength) they become the seats of pain, tenderness, etc., which last a variable time, and that this is attended with cutaneous soreness and, in some steady, and in some instances, the extension of inflammation from neighbouring parts to the muscles causes the preceding symptoms to be produced, so, in other instances, overexertion in muscles may be carried to such a point as to give rise to genuine myositis.

I have long been seeking for an opportunity to ascertain the probable condition of the muscles in myalgia from excessive action, and having obtained it, I think that the profession will be interested with the result of the investigation.

Two methods are open for adoption; one, to examine into the physical condition of the muscles in those who have died of tetanus, in which we have most intense muscular over-exertion; another, to examine the muscles of animals in whom, prior to death, circumstances assure us that there must have been excessive muscular action. The sole difference between these two is that in the former case the muscular action is continuous, and the circulation of the blood comparatively in-active, while in the latter it is intermittent, and the circulation is energetic. As this difference is one of degree rather than of kind, it is natural to conclude that there will be certain resemblances between the appearances in one and the other, though at the same time certain differences might be anticipated from the differences between the circumstances.

We will adopt both methods, and examine first the condition of the muscles in those who have died of tetanus. Externally, we find them firm in texture, pale in colour, and marked by purple spots. Microscopic inquiry shows that their blood-vessels have been emptied, that many of the muscular fasciculi have been torn and that each of these structures is covered with laceration of blood-vessels, and extensive extravasation of blood between and around the broken fibres. As far as my observation has gone, ecchymosis into the sheaths of muscles, or between the muscle and the skin, is not common in tetanus. In ease of recovery from tetanus, the muscles remain rigid and useless for a long period, but rarely, if ever, inflame and suppitate.

I have known two instances in which rupture of fibre, and probably intramuscular ecchymosis, have occurred during life. Both were in gentlemen, and the occurrence took place while running for a long leap. The fracture occurred half way down the biceps cruris; it was attended with sudden and acute pain, and followed by local rigidity and tenderness for many weeks.

We have, then, the broad fact before us, that excessive muscular action will produce rupture of muscular fibres and their associated blood-vessels; and we have reason to anticipate that a similar effect may be produced by a smaller, yet still excessive, amount of such action. We call all muscular action excessive which is followed by stiffness, pain, soreness, cramp, or genuine inflammation.

As sportmen say that after a hare has been well "coursed," or hunted with beagles, if she escape, she is next day, and for a long time, so stiff, and so sore, as to be unable to move, and that very frequently she evades the dogs only to die from her exertions to escape, it became a desideratum with me to secure a well-coursed hare, one in whom, had it lived, stiffness and immobility would certainly have ensued. Such an animal I have, through the kindness of a friend, recently obtained, with the assurance that none, during the season, had given the dogs a longer run. On removing the skin, the following was the appearance presented:—The whole of the muscles, where there was no ecchymosis, were as pale as the breast of a fowl, instead of the ordinary red brown colour usually presented by hares. Excessive ecchymosis existed about the head and neck, which was due to the greyhound's teeth; and there were some other spots about the loins, which were probably due to a similar cause. In addition to these, however, there was very extensive extravasation of blood above the shoulders, along the whole course of the longissimi dorsi, and about the upper parts of the thighs, both on the posterior and the ventral aspects. The whole of the abdominal muscles were covered externally, with a layer of extravasated blood, and the muscles themselves were purple-black. The peritoneum and bowels were of an equally dark colour, with extravasated blood. The legs and shoulders were apparently healthy, yet a close investigation showed that there were small ecchymoses in the substance of the muscles, and under the fascia. On cutting open the longissimi dorsi, they were found to be very dark in colour, very soft, and so brittle in texture that the fibres readily separated. The fibres of the white muscles were also very friable. There was no physical change noticed in the tendons and fascia, except where they were bathed with blood, bloody serum, or pus.

On making sections for the microscope, the greatest care was taken not to destroy the natural appearance during manipulation; and sugar and water were employed to prevent the blood from being dissolved. The cross-sections of those fibres most noticed (with a half-inch object glass of Powell and Lealand's) was that lines of extravasated blood accompanied every muscular fibre in the abdominal muscles, and about every third fibre in the longissimus dorsi, and every tenth fibre in the crural muscles. This gave sections, of the first, an appearance similar to that of the pyramidal bodies of the kidneys. The next thing which attracted attention was that the transverse lines were very indistinct in the vast majority of the fibres in all the muscles. After a close investigation, it was seen that many of the muscular fibres were ruptured through their "sericis," the sarcolemmas remaining entire. At first, I attributed this to some accidental violence during manipulation, and made a series of observations accordingly. The question was ultimately set at rest by my finding, in an abdominal muscle, a ruptured fibre with an accumulation of extravasated blood around the fractured portion. The sarcolemmas being entire, no globules were seen between the divided "sericis," I found no fibres ruptured completely across.

On carefully examining sections from various parts, it was ascertained that ruptured fibres were most common in the abdominal muscles, where the amount of ecchymosis was the greatest; next to these, fractures were most common in the lumbar region; and next to these, in the crural extensors. I found no fractures in the scapular region, nor did I find any in the pectoral muscles, the fibres of which are so flattened as to be more liable to be injured by the pressure of the ribs. In some there was a bulging of the

* It was run for twenty minutes, and completely exhausted the dogs. After being killed it was marked, and delivered to me.