

and the abdomen, have then been surrounded by gauze bandages three or four inches in width. Silver sutures have been employed, their removal being effected on the second or third day.

The house-surgeons, Messrs. Wilkins and Bradford, whose care in attending to these operations has been unremitting, have dressed the wounds within twenty-four hours if there was the least sign of discolouration at the edge of the dressing, but if there was none the dressing has been done once daily for the first few days, and then every other day. By the seventh or eighth day all discharge has ceased and the wounds have healed. Dry lint has then been applied, and a good-fitting truss having in each case been obtained, the patients have been enabled to leave the hospital within a fortnight of the period of their admission.

The absence of suppuration, the freedom from elevation of pulse or temperature, and the good condition and healthy appearance of the operation wound have, in all cases, been remarkable.

In conclusion, I would call special attention to Cases 2 and 5. In Case 2 the herniotomy was complicated with a punctured wound of the intestine. In that case there was vast effusion into the hernial sac, so that the scrotum was as large as a child's head. Thinking that if the fluid were removed by an aspirating trocar I might be able to reduce the hernia without operation, I made a puncture and removed a considerable quantity of fluid; but finding myself still unable to return the intestine, I laid open the sac in the usual manner, and, on exposing the contents, found that the small trocar which I had used had punctured and penetrated the intestine in two different places. In spite of this unfortunate *contretemps*, the man, owing, as I believe, to the antiseptic treatment, had no inflammatory symptoms, and returned to his duties as a bargeman within ten days. Again, in Case 5, where strangulation had existed for sixty hours, the hernia being of the direct inguinal variety, and, therefore, the constriction of the protruded intestine and omentum being the more intense, one could hardly have expected so good a result. In that patient the intestine was of a dark-purple colour, and the omentum nearly black, and there was also the complication of severe diarrhoea after the operation, accompanied by great pain and tenesmus, the fruits of the long strangulation. To keep the antiseptic dressings and bandages *in situ* in such a case was an undertaking of the greatest difficulty; it was, however, managed, the patient made a good recovery, and the wound healed without the occurrence of any suppuration.

Birmingham.

REMARKS ON

ARTERIO-CAPILLARY FIBROSIS AND ITS CLINICAL RECOGNITION.¹

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It is a matter for regret that the discussion on the important question of arterio-capillary fibrosis that has been brought before the Society in so exhaustive a manner, as far as concerns its pathology, by Sir William Gull and Dr. Sutton should be limited so entirely to the consideration of the comparatively trifling question of whether the undoubted thickening of the arteries seen in these cases be due to muscular hypertrophy or fibro-hyaline change. Both probably are present. If any other question has been raised, it is of almost equal insignificance—namely, whether the also undoubted increase of fibrous tissue and decrease of gland tubes in the contracted kidney be due to compressed, shrivelled, and atrophied tubules, or to a new growth of intertubular fibroid tissue. For my own part I believe it to be due to the latter cause, and I think I have seen it in every stage, from a highly nucleated intertubular exudation in acute disease, passing through every phase of organisation till it reaches the dense, old, and sparsely

nucleated fibroid tissue seen in the typically small contracted kidney.

But the question raised by Sir William Gull and Dr. Sutton seems to me of a much larger nature: it is whether or not there is a great and general "fibroid degeneration" occurring in many persons after, or even before, middle life, and which they call "arterio-capillary fibrosis." This question is by no means a new one; it was long ago raised by Sir William Jenner and by Dr. Handfield Jones in their papers in the Transactions of the Royal Medico-Chirurgical Society and in the *Medico-Chirurgical Quarterly Review* respectively. Those papers raise the great question whether there is not such a disease as a general fibroid degeneration which may be classed with other general degenerations, such as the fatty and the amyloid; I think, moreover, they prove it to exist, and arterio-capillary fibrosis appears to be nothing else. The fact that this disease does exist as a great pathological entity has almost been lost sight of, and yet I think most pathologists would recognise the fact that such cases often occur, and their pathology is well known in detail, although not always recognised as a whole.

Cases are familiar enough to me which I should call, following the teaching of Dr. Handfield Jones, cases of "fibroid degeneration," in which one finds a general increase of fibroid tissue in all the organs. They have firm brains and spinal cords, with thickened and opaque arachnoids, and much subarachnoid fluid; ossified cartilages; tough and fibrous lungs, with prominent bronchi; more or less cirrhotic livers, or rather livers with an excess of fibrous tissue; contracted and firm spleens; more or less granular kidneys, with adherent capsules; the mucous membrane of the alimentary canal presenting the usual appearances of chronic gastro-intestinal catarrh; the heart has commonly a hypertrophied left and dilated right ventricle, with thickened valves, containing some white fibroid or atheromatous patches; a more or less atheromatous aorta and larger vessels, and thickened smaller ones: shortly, in fact, an increase of the fibroid tissue throughout their bodies. Such, roughly, are the macroscopic appearances of "fibroid degeneration," and such, I take it, are those of arterio-capillary fibrosis.

The modes of death in these cases are various. They may simply die of exhaustion, or "general decay," no especial symptoms predominating; in others the kidney symptoms will be more marked, and they may be classed as chronic or acute Bright's disease, and die from any of the ordinary complications of this disorder; in some, the lungs may suffer most, and bronchitis or pneumonia terminate life; occasionally the symptoms arising from the liver may be aggravated, and death may appear due to cirrhosis. Apoplexy, aneurism, and symptoms of heart disease are the necessary results of these cardio-vascular changes, and are frequently the immediate causes of death; any fever or acute disease puts them in imminent peril. Such cases may be found therefore scattered throughout the post-mortem records under various headings, according to the complication under which they finally succumbed; but this general condition of "fibroid degeneration" was the ultimate, though not the proximate, cause of death.

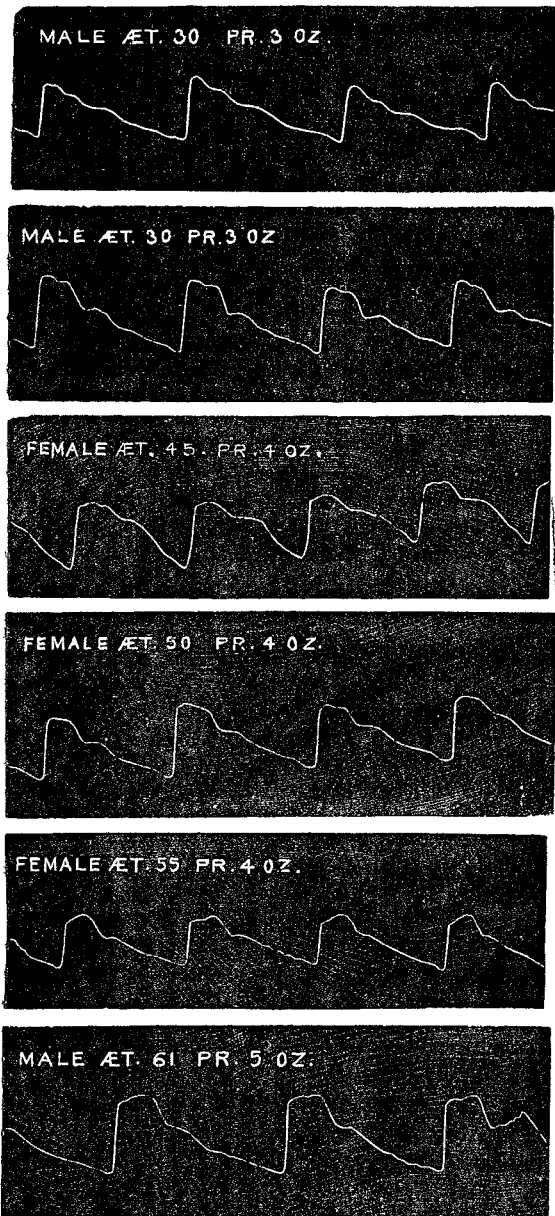
Sir William Gull and Dr. Sutton have stated in their paper that, though they have now studied fully its pathological results, they cannot with certainty recognise its clinical indications. Although in the presence of this statement it would appear absurd and presumptuous were I to pretend to do so, still I cannot but think that the sphygmograph has afforded the key to its recognition. It is very common to meet with people, apparently in good health, who have no albumen in their urine or any other sign of organic disease, but who constantly present a condition of high arterial tension when examined by aid of the sphygmograph. I pointed out the common occurrence of this condition in a paper on the "Etiology of Bright's Disease" published in the Transactions of the Royal Medical and Chirurgical Society for 1874, and I suggested that they were the subjects of arterio-capillary fibrosis. The tracings in Fig. 1 are examples of this condition; they were all obtained from people in apparent health, but whose pulses constantly exhibited this character, and it was almost the only symptom of their very important pathological condition. Such people, however, are very commonly subjects of a gouty diathesis, dyspeptics, suffer from functional derangements of the liver, indulge too freely in alcohol, or have, from one cause or

¹ Made during the discussion on Sir William Gull's and Dr. Sutton's paper at the Pathological Society of London.

another, tainted or impure blood. It does not require the sphygmograph to recognise this most important character of the pulse. Among the characteristics it presents to the finger that of "persistence" is the most important—namely, the ability to feel the artery constantly distended during both the systolic and diastolic period; it is always present

FIG. 1.

High arterial tension in apparent health.



as a more or less rigid cord under the finger—rigid, however, not from thickening or disease of its coats so much as from its constant hyperdistension. Now the pathological results of this condition of high arterial tension are most important and most evident. Given that a certain thickness of vessel is required to withstand the distending power of a normal amount of arterial pressure, it must necessarily follow, if that arterial pressure be very greatly increased, that the vessels must be correspondingly thickened to prevent their overdistension. So with the heart, which must also become hypertrophied to overcome the increased arterial resistance. Thus do we see the cause and the necessary production of the characteristic cardio-vascular changes in arterio-capillary fibrosis. Should this condition of hyperdistension extend to, and originate in, the capillaries, as I believe it does, it should produce the changes invariably subsequent to chronic congestions—namely, increase of fibroid tissue. There is good reason to think, therefore, that a constant condition of high arterial tension must of necessity produce an arterio-capillary fibrosis.

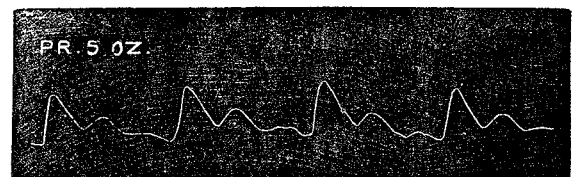
It may be suggested that the anatomical changes first occur, and that the increased arterial tension is merely a result, and not a cause; but I have demonstrated, in the paper previously referred to, that this increase of arterial tension may be a very temporary condition, or may exist for any length of time or throughout life. It is found after

scarlatina previous to and during albuminuria, when it may last for only a few days or even a few hours; it occurs more gradually and for a longer period in pregnancy; it may be produced by nervous causes, such as troubles and anxieties, and pass away with them; or it may occur still more insidiously, and last till death, in chronic Bright's disease.

The causes of high arterial tension may be temporary or permanent. They are usually some form or other of blood-poisoning—namely, gout, lead, alcohol, pregnancy, constipation, scarlatina, and certain forms of dyspepsia, mal-assimilation, and functional disorders of the liver; to these blood conditions certain mental causes may be added. Though generally present in both acute and chronic Bright's disease, the increased arterial tension does not appear to be due to the kidney disease itself, but rather to the preceding blood condition which gave rise to it. Proof of this is seen in the fact that during the recovery from acute Bright's disease, while the urine is still highly albuminous and full of granular and fatty casts, so that the kidney is manifestly crippled and unable properly to discharge its functions, the tension often disappears from the pulse, as seen in Fig. 2, which represents

FIG. 2.

Acute Bright's disease with albuminuria; recovering with low tension.

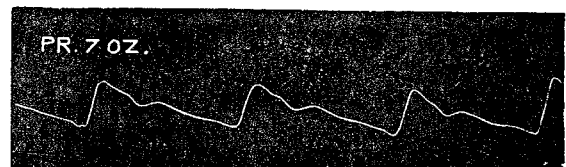


the pulse-tracing of a man, aged twenty-nine, recovering from acute Bright's disease with low tension, the tension having previously been high. This is a most important point in prognosis: it indicates that the blood condition which caused the disease has passed off, and the patient will probably make a complete recovery; while those cases in which the tension remains high, while the dropsy and albuminuria disappear, will probably pass on to chronic Bright's disease and contracted kidney, the blood-poison being of a chronic nature or due to a constitutional condition.

Again, patients suffering from chronic Bright's disease do not invariably present high arterial tension during life, or a hypertrophied heart after death. Fig. 3 represents

FIG. 3.

Contracted kidneys, without hypertrophy of heart, thickening of arteries, or high tension.



the pulse of a man, aged thirty-five, who illustrated this. He was a patient under the care of Dr. Sutton, and died the year following to that in which this tracing was obtained. He had suffered from chronic Bright's disease for ten years, and his kidneys weighed only three ounces; still his pulse-tracing shows but slight arterial tension, and his heart was not found hypertrophied after death, nor his vessels thickened. This was probably a true cirrhosis of the kidney, without an antecedent blood condition.

Some cases have been referred to by Dr. Gowers in which, after destruction of one kidney by disease, the arterial tension has been increased and the heart hypertrophied; but most probably this increased arterial tension existed before the destruction of the kidney, being possibly due to a gouty diathesis, which had also caused the formation of a calculus in the kidney, giving rise to its subsequent suppuration and destruction.

From the foregoing remarks, I think the following propositions may be deduced:—

1. Certain temporary or permanent blood-poisons will produce temporary or permanent increase of arterial tension.
2. Persistent increase of arterial tension will necessarily produce the cardio-vascular changes seen in arterio-capillary fibrosis.

3. Blood-poisons, giving rise to increased arterial tension, are commonly, but not invariably, the causes of acute and chronic Bright's disease.

4. High tension may exist without kidney disease, though rarely.

5. Kidney disease may exist without high tension, but also rarely.

6. That high tension is the result of an antecedent blood condition, and not of the subsequent kidney disease.

Finally, without entering into the discussion of the theory of "stop-cock action" of the muscular coat of the arterioles, I would point out the importance of the observation by Sir William Gull and Dr. Sutton of what they describe as a hyaline exudation from the walls of the *capillaries*, causing thickening of them and in-growths of fibroid material into the surrounding tissues. Taking into consideration the existence of high arterial tension preceding and causing the changes in the vessels, it appears that these changes around and in the capillaries are the results of high pressure in the capillaries themselves. They are the results of chronic capillary congestion, while dropsy and albuminuria are the results of acute capillary congestion. Surely these could hardly occur if the stop-cock action really existed, for this would necessarily protect the capillaries from the results of high tension, which would not reach them. These observations appear to me somewhat antagonistic to Dr. Johnson's theory.

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ON THE USE OF THE ASPIRATOR IN HEPATIC ABSCESS.

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THE following cases illustrate to some extent the advantages and difficulties attending the use of the aspirator in cases of abscess of the liver, and demonstrate the perfect safety with which the liver may be explored. The mortality, in proportion to the number of cases treated, among the British troops in India is so great, and the disease is in itself so dreadful, that any rational mode of treatment which promises even a certain measure of success ought to be fully tested by those who have the opportunity of doing so, and the medical officer who undertakes this must be prepared to meet large calls on his time and patience at the bedside.

It may be noted that four out of the five cases which ended fatally were in a dying state when received by me under treatment; and the operation was only resorted to as a *dernier ressort*, and with the satisfactory results of relieving suffering and prolonging life. In some of the cases no abscess was found, and in one case the existence of any liver disease was highly problematical; but the cases are instructive, as they tend to show that the liver, diseased or otherwise, may be explored with impunity. The cases are abridged a good deal, and only that aspect of each case which has a bearing on the use of the aspirator is given.

CASE 1. — Gunner Robert C—, R.A., aged twenty four years; two years' service. Arrived at Madras from Rangoon, by the steamer *Oriental*, on the 23rd October, 1873. From the detailed medical history received with him, it appeared that he had been in Rangoon about a year and a half; always looked anæmic, but enjoyed fairly good health until Sept. 16th, 1873, when he was admitted into hospital suffering from an ordinary attack of "acute hepatitis"; pain and enlargement of liver were considerable. The symptoms were relieved by treatment, which consisted in the local application of leeches, hot fomentations, mustard, belladonna, &c., and the internal administration of chloride of ammonium, morphia, and laxatives; "but," it is added, "the disease cannot be said to have yielded to treatment," and hence he was sent to Madras for change of air.

On admission into the General Hospital, Madras, he was in a very prostrate state; his face bore a peculiar sallow,

muddy appearance, with an anxious expression of countenance; conjunctiva not jaundiced; skin covered with a cold, clammy sweat; tongue coated; bowels loose; pulse quick and weak; respiration rapid; right side much enlarged and extremely tender, so much so that the most gentle palpation caused agony, and percussion was altogether out of the question. He was given stimulants, concentrated beef-tea, &c., ammonia, and anodynes, and his side was covered with spongio-piline wrung out of hot water. Abscess of the liver was diagnosed, and it was determined to tap it, if he rallied sufficiently to admit of its being done.

On the 4th November he had so far improved under the palliative treatment adopted as to admit of his liver being explored, with a view to evacuating the abscess. The whole of the right hypochondrium was much enlarged, and the pain and tenderness were so general that no clue could be got to the exact position of the abscess. The finest needle of Dieulafoy's aspirator was introduced just below the spot where the tenth rib joins its cartilage, to the depth of about three and a half inches; but no matter was found, and there was no sign of blood on the needle when it was withdrawn. He had a very great objection to the operation, but it was nevertheless thought advisable to give him the slender chance of life which the operation afforded if the abscess could be found. In the evening he said that he felt almost immediate relief from the operation; pain and tenderness of side almost quite gone; he allowed his side to be percussed without evincing much uneasiness; passed a comparatively comfortable day, and took his nourishment with a relish which he had not done since admission.

On Nov. 5th it was noted of him: "Passed a good night. Complains of no pain in his side, and looks wonderfully improved. Percussion causes no pain; and dulness is now found to extend over the whole right side from a level with the right nipple above to the umbilicus below." After a careful examination of his side, the same needle was again inserted between the eighth and ninth ribs, a little to the right of the straight line below the right nipple. The abscess was not found, and the needle came out dry; not even a drop of blood was sucked into it by the aspirator.

Nov. 6th.—Says he feels decidedly better this morning. Side free from pain, bulging less, and area of dulness on percussion diminished; takes nourishment well.

He improved steadily until the 11th, when there was a rather sudden accession of pain in his side, hurried breathing, loose stools, and an anxious expression of countenance. He was so much opposed to the use of the aspirator, and as the position of the abscess could not be ascertained, it was determined not to use it again, but to poultice the side and look for pointing of the abscess. Cough and diarrhoea supervened, and he expectorated small quantities of pus, which he said had a "rotten taste;" the abdomen became tympanitic, the feet swelled, and he gradually sank and died on the 28th November.

Autopsy, eight hours after death.—Body emaciated; rigor mortis present; œdema of hands and feet; no marks of syphilis. Encephalon healthy. A small quantity of fluid in pleura. The right lung weighed thirty-five ounces; it was congested posteriorly, and infiltrated throughout with puriform serum; the most dependent part of inferior lobe was inflamed and ulcerated, and communicated with an abscess in the liver by an ulcerated opening in the diaphragm, to which it was adherent. The left lung weighed thirty-three and a half ounces, and was œdematous and congested posteriorly. Pericardium healthy. The heart weighed thirteen ounces, and was healthy. There were two pints of serum in the cavity of the peritoneum; omentum dark-coloured and free from fat. The liver weighed sixty-six ounces, exclusive of the contents of the abscess. The abscess, about the size of a large orange, and full of brownish pus, was found on the convex surface of the right lobe; the pus had burrowed upward into the right lung, and downward to the angle of the the colon and right kidney; the abscess was also adherent to the cæcum, and communicated with it by small wormeaten-like openings. The abscess was limited on its hepatic aspect by a membrane as thick and as tough as leather, and the liver, to the extent of a quarter of an inch around, was stained a deep blue colour; the abscess contained about a pint of fetid pus. Other parts of the liver appeared healthy.