

of the heart's action, etc. Without wishing to exaggerate the importance of the variations, and disappearance of cardiac murmurs, I have for some time past been impressed with the comparative frequency of these phenomena among my hospital cases; and with the view of eliciting the experience of other observers, I have thought the matter not unworthy to form the subject of a short communication to the Society.

ARTICLE III.—*Case of Enlarged Spleen complicated with Ascites, both depending upon Varicose Dilatation and Thrombosis of the Portal Vein.* By GEORGE W. BALFOUR, M.D., Physician to the Royal Infirmary; and T. GRAINGER STEWART, M.D., Pathologist to the Royal Infirmary.

(Read to the Medico-Chirurgical Society of Edinburgh, 18th Nov. 1868.)

THE case which I am about to narrate is one which presents many points of great interest both in its clinical and pathological history. It affords a well-marked example of a somewhat rare pathological condition, and, taken in its totality and the peculiar sequence of its phenomena, is indeed probably unique; at least, I have not been able to discover anything at all similar to it in medical literature. On account of the importance of the subject, and to render the case more complete, Dr Grainger Stewart has appended to the history of the case a notice of its pathology.

James Johnstone, a tailor, aged twenty, was admitted into Ward VII. on the 16th of June 1868. He was a native of Glasgow, born of healthy parents, and till his admission into the Infirmary here he had never left his native town. Upon admission he stated that he had enjoyed good health till about five years previously (1863), when he suffered very much from severe pains in the back, extending into the region of the stomach, which were much aggravated at irregular intervals of about a month. To obtain relief from these pains he sought admission into the Glasgow Infirmary, and while there he was told that he was labouring under "splenic enlargement." After a residence in the Infirmary of four weeks, the pains formerly complained of had entirely ceased, and he found himself so much relieved that, at his own request, he was discharged.

Ever since that period his abdomen has been persistently enlarged, but not to such a degree as to incapacitate him for his employment.

About seven weeks ago, however (middle of May 1868), while at work, he suddenly felt a violent pain across his stomach, accompanied by an intense feeling of giddiness, and he immediately vomited up about two pints of dark-coloured blood, and continued to vomit blood at intervals, in smaller quantities, during two successive days. The blood vomited was sometimes coagulated and at

others fluid. Subsequent to this attack his weakness and loss of appetite compelled him to cease from his ordinary avocations and to keep the house for three weeks; he then resumed work, but shortly after doing so he observed his legs, and especially his belly, to swell very considerably, and this swelling continued to increase till his admission into Ward VII.

Upon admission (16th June 1868), the patient, a man of low stature, was found to be pale, sallow, somewhat emaciated, with a tumid abdomen and slightly œdematous legs. His pulse was somewhat soft and feeble, but otherwise normal; he complained of no pain, had a slight diarrhœa, and passed only thirty ounces of normal urine daily. He measured forty-four inches in girth, one inch below the umbilicus, which was the most prominent point, and physical exploration detected the presence of a large quantity of free (unsacculated) fluid in the peritonæum, as well as the existence of a large and hard tumour in the left side of the abdomen, occupying the region of the spleen, and extending obliquely downwards, towards and somewhat beyond the umbilicus.

His diarrhœa, which was slight, was regarded as beneficial, and the treatment confined to an attempt to get the sluggish kidneys to act more freely by giving,—℞, decoct. scoparii. ℥xii.; spt. juniperi ℥i.; sig., two tablespoonfuls to be taken three times a day in a wineglassful of water; and ℞, mass. pil. hydrarg., pulv. scillæ, pulv. fol. digitalis, āā gr. i.; extracti hyoscyami, gr. ii.; m. ft. pil. mitte tales xii.; sig., one night and morning.

The blood, examined microscopically, exhibited a deficiency of globules, which floated about free, and did not tend to run into rouleaux as in healthy blood (spanæmia, watery blood), but there was no increase of the white corpuscles.

Under this treatment his urine increased to thirty-four ounces (19th June), but there was no other improvement, and his distention and consequent dyspnœa were so much increased that upon the 25th of June, nine days after admission, I proceeded to perform *paracentesis abdominis*, to relieve these distressing symptoms, and also in the hope that, by giving them a fair start, the kidneys might subsequently be able to prevent the re-accumulation of the fluid. 242 ounces of straw-coloured alkaliac fluid of spec. grav. 1012 were drawn off. It was highly albuminous, almost gelatinous on being boiled, and contained numerous large granular cells with double and triple nuclei containing nucleoli, and also many altered blood-corpuscles.

The patient felt much exhausted after the operation, during the course of which he took several ounces of wine. Notwithstanding that every care was taken to empty the abdominal cavity completely, a little fluid continued to escape from the wound during the succeeding four-and-twenty hours, trickling from beneath the dressing, which was a compress of lint dipped in carbolic acid and oil (℥i. to ℥i.). Chlorodyne was ordered to be given in full doses as

required, to keep down the abdominal pain, which very speedily manifested itself. On the 29th of June his abdomen was still flaccid, and being comparatively free from pain it was considered practicable to submit him to a careful examination, so as to ascertain the exact dimensions of the large tumour readily to be felt in his abdomen, as well as to get any information as to its nature obtainable in this manner. The tumour was found to extend backwards to within one inch of the spine, extending transversely at its upper extremity from the under edge of the seventh to that of the eleventh rib, and stretching longitudinally obliquely downwards towards and rather beyond the umbilicus for a distance of fourteen inches. The greatest breadth of dulness was five inches; the upper edge of the tumour could be felt sharply defined; no splenic notch detectable; the lower border was more rounded and less distinct. A loud blowing sound was to be heard over the tumour along the lower border of the false ribs, somewhat masked by the crepitation produced by the air which had got into the cellular tissue during the operation of paracentesis. The liver, on percussion, appeared to be slightly smaller than natural, the dulness extending to the normal height, but scarcely reaching to the lower edge of the ribs.

On the 30th June he was ordered,—℞, pulv. ipecac. co. gr. v., p. pil. mitte tales xii.; sig., one three times a day, to relieve the pain still felt in the abdomen. The diuretic mixture had been stopped immediately after the operation, one of the results of which was at once to increase the amount of urine voided to fifty ounces daily. The Dover's pills speedily relieved him of the remnant of his abdominal pain; but there being now evidence of the commencing re-accumulation of fluid within the abdominal cavity, on 3d July he was ordered the following remedies:—℞, tinct. ferri perchloridi, ℥ss; spt. etheris nitrosi, ℥iiss. m.; sig., ℥i. ex cyatho aquæquater in die. Habeat electuarii potassæ bitartratis, ℥iv.; sig., ℥i. ter in die aut p. r. n.

In spite of these agents, however, the fluid continued to accumulate, and on 8th July they were supplemented by a fomentation to the abdomen, composed of a large piece of spongio-piline dipped in an infusion of digitalis, made with one ounce of the leaves to twenty ounces of boiling water. Even this, however, failed to check the rapid increase of the fluid, and on 15th July he was retapped at his own urgent request, and 294 ounces of a neutral, highly albuminous, greenish yellow fluid, spec. grav. 1012, were removed. It contained cells similar to those already described, but the nuclei were neither so distinct nor so remarkable. After operation, one grain of opium was given every four or five hours as required, to keep down the pain and tendency to peritonitis, and the wound was dressed with carbolic acid and oil as formerly. Next day there was so great a tympanitic distention of the abdomen as to displace the heart's apex upwards to a level with the nipple, one inch and a half to the right side of which it was found beating. The opium was dropped as the pain and tympanitis ceased, and the steel and

nitrous ether mixture resumed. He was now able to be up and dressed for a day or two, but the fluid rapidly recommencing to accumulate the digitalis fomentation was reapplied. As he complained, however, that this kept him uncomfortable, it was discontinued on the 22d July and replaced by the following liniment:—*B*, tinct. saponis, tinct. scillæ, tinct. digitalis, āā ζ i.; sig., this liniment to be well rubbed into the abdominal coverings frequently during the day. From this liniment, which he continued to use throughout the whole subsequent course of his illness, he fancied he obtained great relief, the skin being frequently sponged with a sponge wrung out of hot water to remove the unabsorbed excess which coated it as with a varnish. No improvement, however, took place in the patient's condition; the fluid rapidly re-accumulated, and on the 3d of August he had again to be tapped, when 316 ounces of a fluid precisely similar to that formerly obtained were drawn off. On standing, a trifling coagulum was formed at the bottom of this fluid; this contained entangled in it almost all the cells present, these being smaller and with nuclei even less distinct than formerly. My colleague Dr Sanders, who was present at this tapping, assisted in making a careful remeasurement of the tumour, which was found to have somewhat increased in size, measuring longitudinally fifteen inches and a half, and transversely eight inches, while the splenic notch could now be distinctly felt just beneath the edge of the false ribs.

On the 13th of August, one drachm of the succus scoparii was added to each dose of his diuretic mixture; but in spite of this the fluid continued to re-accumulate rapidly, and notwithstanding a copious supply of stimulants and nourishing food, his strength as steadily diminished. Throughout the whole course of his illness his bowels were always rather loose, partly from the natural diarrhoea which he had on admission, and partly by the occasional use of the bitartrate of potash electuary. He now also commenced to complain of piles, which gave him much pain, and occasionally bled a little; for these he was ordered galls and opium ointment, which procured him some, but only slight, relief. The external abdominal veins, always visible, now became more developed, and evidently aided materially in conveying the blood from below upwards, while to the great ascitic accumulation considerable cedema of the legs and abdominal walls was now superadded. At last, on his own urgent request, he was again tapped upon the 24th of August, and 459 ounces of a fluid precisely similar to that formerly removed were drawn off. He bore the tapping well, and did not seem extraordinarily exhausted, the pulse, though very feeble, remaining steady and unaccelerated, five ounces of wine being taken during the operation. Next day he lay slumbering and evidently dying, and he expired that evening. During this last tapping, a distinct friction sound was both heard and felt over the region of the spleen.

Remarks.—The clinical interest of this case centred in the coexistence of a large splenic tumour of old standing with a somewhat suddenly developed primary ascites; and by primary ascites I mean a dropsy of the peritonæum unconnected with any considerable amount of general œdema, as is always the case when it arises from cardiac or renal disease, or where it depends upon anæmia, as sometimes happens towards the termination of diseases of the spleen of various kinds. In this case we had indeed a splenic tumour and some degree of anæmia, but there was only the most trifling amount of œdema of the legs, quite insufficient to lead us to regard the anæmia as of any importance in the causation of the ascites. On the other hand, the peritoneal dropsy, in this instance, presented that primary character (commencing in the abdomen), that absence of all but the most trifling œdema of the lower part of the body, with complete absence of dropsy of the upper part of the body, as well as absence of primary dyspnœa or albuminuria, or any other symptom of thoracic or renal disease, which is usually, and very rightly, regarded as diagnostic of some obstruction to the portal circulation either in its trunk or more commonly in its ramifications within the substance of the liver, but which may also arise in the course of various forms of subacute peritonitis, simple, cancerous, or tubercular. In this case there were no symptoms pointing to primary affection of the liver, no primary hepatic pains or tumour, and no dyspepsia, constipation, or purpuric deposit in the urine; while the slight diminution in the hepatic dulness when the patient first came under my observation, could be readily accounted for, if dependent upon actual diminution in the size of the liver, by the combined influences of the pressure of the splenic tumour, the existing ascites, and that of the intestines dilated by flatus; while, if only apparent, as it might have been, the effect of the clear tympanitic sound of the flatus-distended intestines was amply sufficient to neutralize a portion of the outlying hepatic dulness, and thus produce a merely apparent diminution in the size of the liver. The existence of true hepatic disease was from the first ignored, and, as it subsequently appeared, rightly so. On the other hand, the long continuance and primary character of the splenic tumour seemed to point to that organ as the *fons et origo mali*; while the occurrence of the peculiar cells described in the fluid drawn off by the first tapping, so closely resembling cancer cells, and also the existence of the blowing sound over the enlarged spleen, both seemed to indicate the probable existence of a cancerous affection of the spleen, spreading to the peritonæum, and thus originating the ascites. The subsequent history of the case dispelled this illusion; the seeming cancer cells dwindled down to the reality of ordinary peritoneal epithelium, swollen somewhat by the fluid surrounding them, and the bruit quite disappeared. Having thus failed to connect the splenic tumour with a disease which, by its progress, might

naturally account for all the symptoms of the case, I was then led to separate what seemed to be the two distinct affections, always of course regarding the ascites as a sequela, but by no means a necessary sequela, of the splenic tumour. Taking this view of the case, in the absence of any history or symptom of ague, or of any residence in an aguish locality, as well as of any history or symptoms of tubercle or cancer, it seemed impossible to differentiate causally this splenic tumour from those other similar tumours, the mode of origin of which is as yet involved in obscurity. Indeed, it is with the view of assisting in the future differential diagnosis of such tumours that I have been thus minute in detailing the symptoms of this most interesting case, as well as the difficulties which beset its diagnosis. From the great pain which accompanied the primary development of the tumour, which, I have since learned, was so great as to make the patient roll in agony on the floor, and which, with frequent intermissions, continued more or less present in a minor degree throughout his long illness, it seemed probable, however, that some obscure inflammatory affection was the occasion of this great enlargement of the spleen; while the ascites and symptoms of portal obstruction were considered sufficiently accounted for by the extension of the inflammatory irritation to the peritonæum, actually proved to exist by the existence of a fibrinous coagulum in the effusion, and of a friction sound over the tumour, as well as by the mechanical compression of the mesenteric veins by the heavy tumour lying across them. How far this was right and how far wrong shall be presently shown; probably, under the peculiar circumstances of the case, it was the nearest approach to a correct diagnosis possible. At the same time, every obscure inflammatory affection does not always present the same symptoms; and it is well known that ascites never arises from an enlarged spleen alone. As if to illustrate these points, we had just lately, in Ward VII., a strong, hale, ruddy man of 52, a miner, from Halbeath in Fife, certainly not an aguish locality, who had no diarrhoea or other exhausting disease, and who stated that he never had any, being, as remarked, by no means anæmic in appearance, yet this man had quite a remarkable number of white corpuscles in his blood, as well as an enlarged spleen. The tumour did not extend beyond two or three inches beneath the ribs, the dulness on percussion occupying parts of the 7th, 8th, 9th, 10th, and 11th ribs, and extending longitudinally beyond the umbilicus for a distance of ten and a half inches, and about six inches in breadth, a wide semicircular notch occupying the centre of the anterior edge of the tumour. Neither ascites nor anasarca were present. For two years past he had suffered from pains in the splenic region, and about four months and a half ago these had culminated in an acute attack, for which he was leeches and blistered, and which led to the discovery of the tumour. Here, then, we had a case of obscure inflammatory affection of the

spleen presenting symptoms very similar to the first stage of Johnstone's disease, except the leucocythemia, which was absent in his case, and yet there was no dropsy, notwithstanding the great size of the spleen. The exact cause of this man's tumid spleen is of course *adhuc sub judice*; it is not likely to be the same as in Johnstone's case, and it would be interesting to know what relation the increase of the white corpuscles bears to any definite cause of splenic tumefaction.

The treatment in Johnstone's case was, of course, chiefly palliative. Too exhausted when he came under my care to be actively purged, it was yet imperative to keep free his bowels, which were naturally loose, so as to delay as long as possible the necessity for paracentesis, an operation the necessity for which no amount of stimulation of the kidneys was able to prevent, and which was had recourse to, from time to time, to give him that temporary relief from suffering which he anxiously craved from us, but which was, of course, powerless to prevent the steady advance of the inevitable end, an end which, however, was by these means, aided by a generous diet and a liberal allowance of stimulants, staved off as long as possible.

Autopsy, with Remarks, by Dr Grainger Stewart.

The body was emaciated, and in some parts somewhat œdematous. The abdomen was considerably distended, and the superficial veins were distended and tortuous.

Thorax.—The viscera were pressed upwards. The heart was somewhat pushed towards the right side, it weighed 8 oz., was contracted and empty, its valves and substance natural. Aorta not calcareous. The pleuræ were natural, excepting at the posterior base of the right, where there was a slight effusion of recent lymph. The substance of both lungs was natural.

Abdomen.—The abdomen contained a considerable amount of yellowish serum; the peritoneal surfaces generally, and particularly in its lower part, were of a slate-gray colour, and coated with recent lymph. The coils of intestines were matted together, but the adhesions were mostly loose, only here and there, there were older fibrous bands. The liver was connected with the diaphragm by dense old adhesions. Its form was peculiar, the left lobe being atrophied. It weighed 1 lb. 15 oz. It was $9\frac{1}{2}$ inches long; the left lobe only 2 inches. The capsule was at some points thickened, and at the upper surface, near the anterior margin just above the gall-bladder, the substance was atrophied, so that the gall-bladder projected upwards through the liver. The part where it projected was three-fourths of an inch long by one-half inch broad. The gall-bladder was altered in form, its walls were thickened and œdematous, and it projected upward as above described. It contained a quantity of healthy bile, and its communications with the liver and duodenum were natural. The substance of the liver was

dense and congested; the ducts were thickened throughout, somewhat dilated and stained with bile. The vena cava hepatica was natural, as were also the tributaries of the hepatic vein and the branches of the hepatic artery. The portal vein, at its entrance into the liver, was completely occluded with clot. Its walls were thickened, but exhibited no trace of suppuration. The clot was pretty firmly adherent to the lining membrane, but could be separated. Secondary recent red coagula extended along the branches of the vein for some distance into the liver. At the entrance they were quite decolorized, not softened in the centre. Close by the porta there was a dense fibrous mass of the size of a small orange, and composed of the aneurismal dilatation of some of the branches. The walls of the vein were in some parts calcareous, the plates varying in size from that of a fourpenny piece to that of a shilling, and situated mostly in the deeper layers of the inner coat. Some parts also presented the atheromatous change. The dilatations aneurismal or varicose were situated on the splenic vein. They were in four parts, rounded externally, and connected with neighbouring structures by fibrous tissue, and filled with clots mostly decolorized. The walls of the saccules were entire. They were in truth saccular dilatations of the vein occupied by clot; three of them were of the size of pigeons' eggs, the fourth was somewhat smaller and less perfectly filled. The spleen was enlarged; weighed 3 lbs. 6 oz. It measured $10\frac{1}{2}$ inches long, and $7\frac{1}{2}$ inches in its greatest breadth, and 3 inches in thickness. The capsule was thickened and opaque in some parts, roughened with old and recent lymph. Its upper end was firmly united to the diaphragm, and here and there there were adhesions to the neighbouring viscera. At many points there were patches of recent extravasation in the capsule, and towards the upper part there was an effusion of a third of an inch in length, connected with a fusiform sac containing blood, and connecting it with neighbouring points in the abdominal wall. The blood poured out into an adhesion. The splenic vein was dilated throughout, in some parts calcareous, the deposit being in the deeper layer of the inner coat. There was no black pigment in the capsular substance. On section, the substance of the organ seemed dense and fibrous. In some parts there were fawn-coloured spots, the result of old extravasations. The Malpighian bodies were nowhere prominent. There was no waxy degeneration. The kidneys were natural. The œsophagus was somewhat dilated; its veins congested and tortuous. The stomach was of natural size. Its mucous membrane was lightly softened in the splenic end. It was generally of a pinkish hue, with slight hæmorrhagic erosions. The duodenum was congested, and contained bile. The small intestine presented throughout an appearance of slight thickening and congestion of its mucous membrane. The large intestine was of a slate-gray colour. The cæcum and ascending colon contained recent and old ulcers, some of considerable size.

The transverse and descending colon also contained many chronic ulcers, some in process of healing, others advancing.

There are several points of considerable pathological interest in this case.

1. The calcareous deposition, and the atheroma of the portal vein and its tributaries.

This condition is rare; so much so, that I have never before observed it in the pathological theatre. Once, in Glasgow, I was present at the post-mortem examination of a man who, under Dr Gairdner's care, had exhibited many of the symptoms of cirrhosis of the liver, and in whose body the only important lesion was calcareous degeneration of the portal vein. In that case it was much more diffused, and there was neither dilatation nor thrombosis. Calcareous deposits are usually, as in this case, in the inner coat of the vessel, sometimes merely in patches, at others surrounding the vessel like rings. They are more common on the dilated subcutaneous veins of the leg than in other parts, and usually accompany a similar change in the arteries. In this case there were no calcareous plates on the arteries. Frerichs remarks that, when they do occur, there is usually no fatty thickening of the inner coat, no true atheroma. In this case, however, they coexisted. Both are regarded as results of chronic endophlebitis.

2. The varicose or aneurismal dilatations are exceedingly rare; indeed, among all the authorities I have consulted, I have not found a single strictly analogous case.

Authors describe two varieties of dilatation of the portal veins, viz., slight degrees of simple dilatation resulting from obstruction in the liver, the heart, or the lungs. In such cases, the main stem of the vein is most affected, rarely reaching twice its natural size, and the tributaries are comparatively rarely affected. The second form is the varicose, which almost never affects the trunk. Pluskal records a case of a child in which death resulted from rupture of a saccular dilatation of the size of a hen's egg, situated on the umbilical vein. Færster mentions that he has frequently seen considerable dilatation of the veins of the stomach, mesentery, and bowel in various obstructive diseases.

The general dilatation of the tributary vessels was very distinct in our case below the seat of the great dilatations, but these dilatations were quite distinct in their character. They were situated on one side of the vessel, like an aneurism or certain forms of varix, and communicated with the vessel by a mouth considerably narrower than the body of the swelling. The coats were entire and somewhat thickened, and at one or two points the inner one contained calcareous plates. The existence of these plates and of such dilatations together, render it probable that the change depended upon an inflammatory affection of the coats of the vessel, rather than upon mere obstruction.

3. The thrombosis. This condition, which is generally spoken

of by the name pylephlebitis adhesiva, has been found to result from various causes; (α) from pressure on the vein, as by gall-stones in the ducts or gall-bladder; (β) from perforation of the wall, as by pus, by sharp bodies penetrating the stomach; (γ) from extension of clots from the umbilical vein in newly-born children, or from emboli derived from the intestinal tributaries; (δ) from atrophy of liver, and subsequent obstruction of its capillaries.

In the case under our notice, it appeared that the formation of the thrombi was due to none of these causes, but had resulted from the extension of the clot from the sacs in which it had first formed. They were in layers, and some of them had softened.

4. The relation of the hepatic affection and that of the portal vein. It appears not improbable that in this case we have a confirmation of the observation of Rokitansky, that we sometimes find atrophy of the liver result from the obstruction of hepatic branches of the portal vein, and that this obstruction may proceed from the thrombi in the branches of the vein.

The character of the atrophy of the liver confirms the opinion that it is secondary; and this view is also supported by the fact, that the changes in the portal vein were much more advanced than we usually find them in cases of even greater atrophy, such as in typical examples of cirrhosis of the liver.

5. The results of the lesion. The enlargement of the spleen, the hæmorrhage into its substance, the ascites, the catarrh of and pigimentary deposit in the stomach, intestines, and peritonæum, all closely correspond to that which we find in cases of obstruction of the portal circulation dependent upon other causes.

ARTICLE IV.—*Case of Congenital Malformation of the Œsophagus.*
By THOMAS ANNANDALE, F.R.S.E., Lecturer on Surgery.

ON the evening of Thursday the 28th of October, I was asked by Dr Thomson of Teviot Row, to see with him an infant thirty hours old. The patient—a first child—was born at the full time. Both parents were young, healthy, and well formed, and the mother's labour was perfectly natural. The infant at birth presented no external malformation, but it was noticed that it was several moments before it breathed, and when respiration became established, it was at times quick and laboured. It was also particularly observed by both Dr Thomson and the nurse, that when the child was fed for the first time (with milk, and by means of a spoon), the fluid only remained down a few seconds, and was then returned through the nostrils and mouth with a sort of spasmodic jerk. The infant passed the ordinary meconial fluid by the rectum two or three times, but no natural fæcal matter ever passed away.

Repeated and careful attempts were made to feed the patient, but