CASE OF SARCOMA OF THE STOMACH IN A CHILD AGED 3½ YEARS.

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THIS case during life was a clinical puzzle, and after death it proved to be a pathological rarity. Sarcoma of the stomach seems to be uncommon at any age, but in early life it is very rare, and this is the only case I know of in a young child.

The boy was 3½ years old when admitted to the Royal Hospital for Sick Children, under my care, on August 22nd, 1898; he died on December 6th. The aspect was that of feebleness, with great pallor or anæmia, and with slight indications of rickets, especially in the lower limbs. The pallor was very extreme, and did not seem to be accounted for by anything in the previous history, which was simply that of failing health for three months, after an attack of vomiting of short duration. This vomiting was not associated with any appearance of blood; it was followed by disturbed action of the bowels—at first constipation, latterly intercurrent diarrhoea. A vague account of some tarry motions was obtained from the mother; but nothing of this kind, indeed no blood in the motions in any form, was seen during the three months and a half the child was in the ward. Only once was some brownish fluid, like altered blood, brought up from the stomach during his residence in the ward; even this was open to the suspicion of its depending on the use of raw meat juice which had been ordered; but the last use of it was twelve hours before the vomiting occurred, and so the probability was that some little oozing of blood from the stomach had occurred.

There seemed to be no pain anywhere, and no tenderness in the abdomen. The abdomen was slightly distended, but this might be expected in a rachitic subject. No tumour could be felt; but after a time, on careful search, the spleen, as supposed, was felt high up under the left ribs in the lax abdomen; the enlargement, if any, was put down to rickets, if indeed feeling the spleen so high up implied any enlargement at all; in fact, we did not think the spleen felt larger than normal. In view of the discovery of the sarcoma in the stomach after death, the doubt arose in my mind as to whether it might not have been this tumour, instead of the spleen, which was felt. Apparently such a mistake was made in a case reported by Greenhow and Cayley, where a firm, slightly movable tumour was found in the left hypochondrium, and was supposed to be the spleen, when the event made it almost certain that it was the sarcomatous tumour in the stomach which had been felt. At the *post-mortem* examination of my patient, at which I was unfortunately absent, those present, including the house-physician who had detected the spleen during life, thought that the position of the sarcoma was not such as to agree with the position of the spleen as felt and described.

The aspect of the child was, throughout, that of extreme apathy; he lay listlessly nearly all day, often curled up, with the head bent forward. During periods of slight improvement which occurred several times, he would brighten up for a few hours so as to amuse himself with toys, but this was of short duration. Even when dullest, however, he could speak and tell his name.

The problem was how to account for the profound anæmia and the extreme feebleness of the child. An examination of the blood soon after admission showed no excess of the white blood corpuscles; the enumeration gave 3,200,000 corpuscles per c.mm.: no poikilocytosis. After five weeks' residence the number was noted as 2,560,000, with hæmoglobin at 20 per cent. In another month the number had come down to 1,812,500, with hæmoglobin at 15 per cent. By this time there was a slight increase in the proportion of the white corpuscles to the red, but only such an increase as occurs in many disorders. In other three weeks the numbers were noted as 1,593,000, and the white were estimated as 1 to 177 red corpuscles. No alteration in the shape of the corpuscles was found. It was clear that the case was not one of leukæmia, and the condition of the spleen did not suggest this. A few small glands were felt in the neck and one or two in the axillæ, but they were too trivial to warrant much importance being

attached to their presence. Failing to find any apparent explanation for the anæmia, and for the obviously grave illness, the idea of a pernicious anæmia was suggested to my mind as the only probable explanation. With the gradual diminution of the corpuscles there was progressive pallor, with a sallow tinge, almost of a lemon colour, a feature which seemed to favour this view; but the deterioration of the blood, especially at the first examinations, seemed comparatively slight, and, even at the last, it scarcely reached the low figures we expect in this disease. Nor had I ever seen cases of pernicious anæmia in children, although some have been reported as such.

The existence of a slight but pretty continuous pyrexia, in the absence of any explanation on physical examination, seemed, so far, to favour the idea of a pernicious anæmia. The temperature ranged from 100° to 101.5° or 102° F., occasionally reaching 103°. At the very end the temperature continued at 104° for a few days, when some pulmonary disorder ended the case. An examination of the fundus of the eye, made twice by Dr. Thomas Reid, showed no hæmorrhages, and, indeed, nothing special beyond a little passive congestion of the veins.

A physical examination of the thoracic organs failed to reveal anything abnormal at first; latterly, a little wheezing *râle* was heard at times, and a systolic murmur at the apex became audible. No albumen appeared in the urine during his residence; some pink urates were noted on admission. Towards the end of the case a little puffiness of the feet and hands, and even of the face, was noticed. The weight of the child was 25 lbs. on admission, and a few days before death was noted as 22 lbs.

In view of the existence of a tumour in the stomach, the following particulars as to the digestive functions are added. There was very little appetite, the child seemed to prefer milk to anything else, but he was so apathetic as to seem rather indifferent to food. Vomiting was a prominent symptom, and at first was thought to explain the failure of our efforts to improve the blood and the nutrition. At first the vomiting was only occasional, but in the second half of September vomiting was noted on five days; in October vomiting occurred on five or six days, sometimes more than once a day; in November vomiting occurred on nineteen days, and often more than once in the day. The vomiting could not be traced as having any special relationship to feeding or to any definite cause, and the vomited matter was not suggestive of anything special, except on the one occasion already referred to, when brownish fluid was noticed. The state of the bowels was usually troublesome as regards diarrhoea, calling for treatment; several times, however, constipation alternated with this.

In view of the nature of the case, details of treatment are omitted. The child died exhausted on December 6th with a terminal pyrexia associated with pulmonary congestion. The child was under the care of my colleague, Dr. Middleton, for two or three weeks at the end, but he suggested that I should report the case, as it was so long under my charge.

Necropsy.—The *post-mortem* examination was made by Dr. A. R. Ferguson, Pathologist to the Western Infirmary, who made the following report: The stomach presented a firm bulky tumour, set in the posterior wall, closely impinging on the greater curvature, and rather nearer the cardiac than the pyloric orifice. It had an almost equal projection externally and internally. It measured on the mucous side 2.5 by 2.5 cm., the submucous infiltration being about 3 cm. in length. On the serous side it measured 4 by 4.5 cm. The projection was 1.8 cm. The tail of the pancreas was somewhat closely related to the tumour posteriorly, but dissection showed it to be completely separated by a thin veil of connective tissue. On the mucous aspect of the stomach, and immediately distal to the main rounded projecting mass of the tumour, there was a small circular area with a depressed centre and obviously infiltrated edges. The central portion of this area was the only part conveying the impression of ulceration, and even there the appearances were not conclusive. Many of the glands in the mesentery were slightly enlarged, but on microscopic examination they gave no evidence of being involved by tumour tissue. Examined microscopically, the tumour was found to be a highly cellular one throughout. The degree of cellularity was increased in that portion immediately underneath the mucous coat of the stomach. The predominant cell-type, of which the tumour was composed, occurred in the form of prominent spindle-shaped elements. The nuclei of these cells were large, with rather faintly staining and coarsely granular nucleoplasm (x, in micro-photograph). Their form, seen in various planes of section, was for the most part fusiform; but here and there larger and more irregular forms of nucleus were seen. In addition to these larger cells, and occurring amongst them, there were a considerable number of smaller spindle-shaped elements, the protoplasm of whose nuclei stained deeply and in a homogeneous fashion. Internally, the glandular elements of the mucous membrane were detected over the tumour, although considerably diminished in size by some loss of superficial

substance. The tissue of the tumour appeared to separate these by occupying the spaces between them. The connective tissue supporting this cellular tumour tissue was very scanty in amount, nuclei characteristic of fibrous connective tissue being met with, practically, only in the external (peritoneal) confines of the tumour. There was a certain

FIG. 1.—Sarcoma of stomach, peritoneal surface. (From a photograph.)

amount of inter-cellular ground substance of very finely granular, almost homogeneous character throughout the tumour. The tumour was tolerably vascular, the thin-walled vessels being of small size.

FIG. 2.—Sarcoma of stomach, mucous surface. (From a photograph.)

Of the other organs it need only be stated that the pericardium contained 2 ounces of fluid, the muscle of the heart being pale. The spleen was of normal size. The lungs were oedematous. Liver, kidneys, and intestines were normal, or only presenting a pallid appearance.

The most important paper on this subject is one by Tilger in *Virchow's Archiv*, Bd. cxxxiii, 1893, on Primary Sarcoma of the Stomach. The plate there given presents considerable resemblance, in the naked-eye appearances, to my case. Both show a great projecting mass on the peritoneal as well as on the mucous surface. Tilger's case presents more of a pedunculated appearance on the serous surface than mine. His case was that of an old woman. In Perry and Shaw's *Examination of 50 Cases of Malignant Disease of the Stomach*, in 1892, 4 proved to be sarcomatous; 2 of these were in young patients, 15 and 18 years. In a case reported by Dr. Wickham Legg, in 1874, the patient was a girl of 17 years; and it was considered that this was the youngest case of sarcoma of the stomach published up till that time. The case of sarcoma of the stomach reported by Greenhow and Cayley is interesting, as the tumour felt during life was regarded as the spleen, and the detection of a considerable excess of white blood corpuscles no doubt favoured this erroneous view. I have been unable to find records of any definite case of sarcoma of the stomach in a young child.

FIG. 3.—Sarcoma of stomach. Micro-photograph of section. High power. Zeiss 4 mm.

FIG. 4.—Note.—1. Elongated nuclei, with rounded extremities, and faintly staining nucleoplasm. 2. Same in transverse section. 3. Lymphocytes throughout tumour.

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CREMATION IN THE UNITED STATES.—According to the *Boston Medical and Surgical Journal*, the total of persons whose bodies have been cremated in the United States up to the present time is about 8,800.