PYOGENIC ABDOMINAL WALL AND PSOAS ABSCESSES IN CHILDREN

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Soft-tissue abscesses are among the commonest conditions treated in any casualty department. However, the deeper seated abscesses in children often pose a diagnostic problem and these are frequently admitted to the wards with a diagnosis of a much more sinister nature.

The purpose of this paper is to review 62 consecutive cases of pyogenic abdominal wall and psoas abscesses admitted to the Red Cross War Memorial Children's Hospital, Cape Town, during the 7-year period 1958 - 1964.

Of these 62 cases, 7 were solitary primary pyogenic psoas abscesses and these will be discussed separately, because of the entirely different clinical presentation. The remaining group of 55 cases of abdominal wall abscesses will be discussed first.

ABDOMINAL WALL ABSCESSES

Age, Sex and Racial Distribution

Forty percent of the children were 2 - 3 years old (Fig. 1). In this group two-thirds of cases were males. Eighty-four percent of cases were Coloured, 14·2% Bantu and 1·8% White.

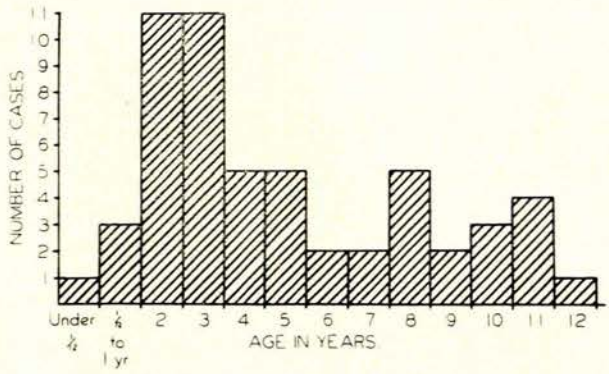

Fig. 1. Graph showing age distribution of 55 cases of abdominal wall abscesses.

Clinical Features

Symptoms. Abdominal pain and swelling were the commonest symptoms. Abdominal pain was present in 60%, whereas abdominal swelling was present in 80% of cases. These symptoms occurred together in 40% of cases. In 40% the presenting symptom was a painless abdominal swelling and in the remaining 20% pain was the only symptom.

Signs. All cases had palpable masses on admission, except 2, in whom the masses developed only a few days after admission. Tenderness, redness, dilated veins and other signs of inflammation were present in 65% of cases.

Only 40% of cases were pyrexial on admission and only 7% appeared acutely ill and toxic.

The white cell count was raised above 12,000/cu.mm. in 82% of cases. The ESR was significantly raised (over 20 mm. in 1st hour Westergren) in 90% of cases. Anaemia was a common finding in this series and haemoglobin readings of less than 10 G/100 ml. were recorded in 36% of cases. Severe malnutrition was noted in only 7% of cases. One case had associated tuberculosis.

Sites

The anatomical distribution of lesions is shown in Fig. 2. The commonest site was the loin. Lesions in this situation occurred in 31% of cases. Next in frequency

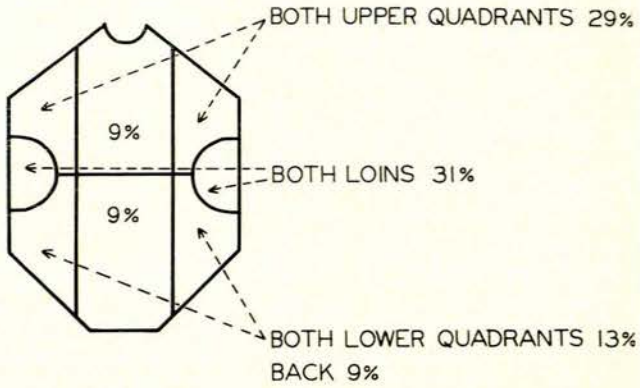

Fig. 2. The anatomical distribution of the abdominal wall abscesses.

were left and right upper quadrants, where lesions occurred in 29% of cases. In the above two sites 30% of the cases had extraperitoneal or retroperitoneal lesions.

Lesions of the rectus sheath were present in 18% of cases, being equally distributed above and below the umbilicus. In all but one of these cases the lesion was posterior to the rectus muscle.

Most lower quadrant lesions and all the lesions on the back were intramuscular in situation.

Multiple abscesses were present in only 7% of cases.

Diagnosis

It was not uncommon for cases to present with masses which appeared to be intra-abdominal, and an incorrect diagnosis was made in 33% of cases. This applied particularly to cases with abscesses situated extra- or retroperitoneally and often the correct diagnosis was not made before surgical exploration. Consequently, much valuable time and effort were spent on unnecessary investigations, e.g. intravenous and retrograde pyelography; VMA estimations; contrast gastro-intestinal studies and skeletal surveys.

Bacteriology

In 78% of cases *Staph. pyogenes aureus* was cultured, of which 54% were sensitive to all antibiotics. In 2% *E. coli* was cultured and in 20% no growth was obtained.

Treatment and Results

All cases were treated by surgical exploration and drainage under general anaesthesia, and all responded well to

treatment. No recurrence or flare-up of abscesses occurred and none had residual sinuses.

PRIMARY PYOGENIC PSOAS ABSCESSES

Age, Sex and Racial Distribution

This condition occurred in a much older age-group, 4 cases being 8 - 11 years old, and the youngest being 4 years old. All were males. Six were Coloured, and 1 was Bantu.

Clinical Features

Symptoms. All cases presented with loin or lower abdominal pain and 5 complained of a limp. Constitutional symptoms such as anorexia and malaise occurred in 4 cases. The duration of symptoms varied from 3 days to 3 weeks, 4 cases presenting with symptoms of less than a week's duration.

Signs. In none of the cases was a mass palpable, and all cases had marked psoas spasm. Scoliosis was present in 4 and lower abdominal tenderness, on the affected side, in 4 cases. In none of these was there any evidence of infection or abscesses elsewhere, although in one case a history of previous abdominal trauma, followed by an infected haematoma, was obtained.

Three cases were pyrexial on admission, but only one appeared acutely ill and toxic.

The white cell count was raised (15,000 - 29,000/cu.mm.) in 6 cases and the ESR (49 - 96 mm. in 1st hour Westergren) in 5 cases. Anaemia (haemoglobin less than 10 G/100 ml.) was present in 2 cases.

The above clinical features are best illustrated by a typical case history.

Illustrative case report. Three weeks before admission the patient, a Bantu male aged 10 years, complained of lower backache. He developed a painful limp and kept his right thigh in a permanently flexed position. On examination he was a well-nourished child, with a temperature of 101°F, but did not appear particularly toxic. He had a moderate tachycardia of 120/min. Right inguinal lymphadenopathy was noted. Examination revealed no abnormalities apart from slight tenderness in the right loin with associated scoliosis and marked right psoas spasm, the hip being held permanently in 30° of flexion. Clinically and radiologically the right hip joint appeared normal and X-ray of the lumbar spine and pelvis revealed no evidence of bony pathology. An X-ray of his chest was normal. The haemoglobin was 11 G/100 ml., white cell count 28,000/cu.mm., and the ESR 78 mm. in the first hour.

A diagnosis of primary pyogenic psoas abscess was made, and the child was operated upon on the day of admission. An oblique lower muscle-cutting abdominal incision was used and the right psoas muscle was approached extraperitoneally. The muscle appeared pale, oedematous and indurated and on exploration an abscess cavity was found in the substance of the muscle, at the level of the pelvic brim. The abscess was evacuated and yielded approximately 20 ml. of thick yellow pus. A drain was inserted and the wound closed in layers. Postoperatively, the patient was treated with terramycin and streptomycin and made an uneventful recovery, the drain being removed on the 5th postoperative day. On the 10th postoperative day he was discharged fully ambulant, with no evidence of psoas spasm or residual sinus.

Sites

All cases had deep-seated abscesses within the psoas muscle. In 6 cases the abscess was situated inferiorly in the region of the pelvic brim, whereas in 1 case the lesion was higher at the renal level.

Diagnosis

Intravenous pyelography was done in 5 cases, and in 3 of these, mild pyelectasis and renal displacement were seen on the affected side (Fig. 3). Apart from scoliosis, the lumbar spine and hips were normal. A correct clinical diagnosis was made in only 2 of the more recent cases. Previous diagnoses varied and included psoas spasm of unknown cause, acute appendicitis, external iliac adenitis, perinephric abscess and vertebral osteitis.

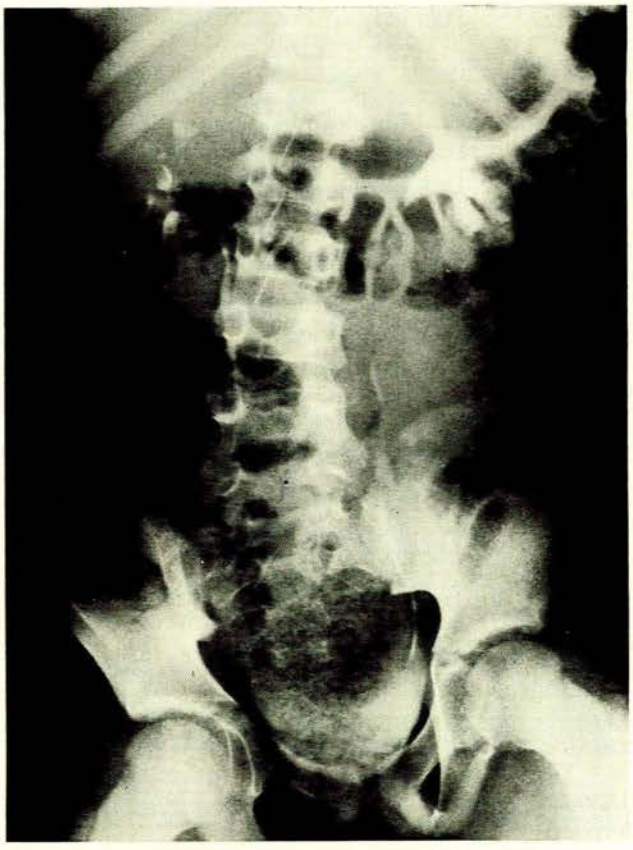

Fig. 3. Intravenous pyelogram in a case of primary pyogenic psoas abscess. Note the scoliosis and the mild pyelectasis on the left side.

Bacteriology

In all the cases a culture of the pus revealed *Staph. pyogenes aureus*, sensitive to all antibiotics in 3 cases. In 1 case coliform organisms were also cultured.

Treatment and Results

Surgical exploration and drainage, using an extraperitoneal approach, was performed in all cases. All cases responded well to treatment and remained free of complications.

DISCUSSION

The causative organism in the majority of these lesions is *Staph. pyogenes aureus*, but the pathogenesis remains obscure. Histories were usually indefinite, but a history of trauma was obtained in 18% of the abdominal wall abscesses and in 2 of the 7 cases of pyogenic psoas abscesses. It is interesting to note that all cases of psoas abscesses in this series were male and trauma may have

played a more significant role than the case histories would suggest. The possibility of infection in a haematoma arises, but in none of the cases was any evidence of blood clot found.

Previous pyogenic foci which might suggest a haematogenous metastatic pathogenesis were recorded in only 7% of the abdominal wall abscesses and in 1 case of pyogenic psoas abscess.

Constitutional factors may predispose to the condition, in that all patients, except one, were non-White and tended to come from the lower socio-economic group. Malnutrition, although only found overtly present in 7% of cases, may play a role.

Altemeier and Alexander[1] reviewed 189 cases with retroperitoneal abscesses. Of these, 29 cases were described as retrofascial, occurring behind the transversalis fascia, and would be comparable with the retroperitoneal abscesses in our series. They found that most of these abscesses were of osseous origin from infection originating in the vertebral bodies (tuberculosis) or 12th rib (actinomycosis), dissecting along the ilio-psoas muscle and fascia. The remaining cases were described as metastatic or of unknown aetiology. However, none of their cases in this group occurred in patients under 10 years of age. Daviglus and Rush[2] report on 45 cases of retroperitoneal abscesses in whom the source of infection was either unknown or from a presumed distant focus in 66%. The remainder were due to intra-abdominal pathology.

The relationship of these lesions to tropical myositis is not known. This condition is said to occur commonly in adults and rarely in children. Gelfand[3] states that the causative organism is *Staph. aureus* and mentions filarial infestation or scurvy as possible predisposing factors. He also maintains that the lesions in tropical myositis occur most commonly in the extremities. In our experience intramuscular pyogenic abscesses are uncommon in the extremities and classical tropical myositis does not occur in Cape Town. However, Bearn,[4] in his review of 19 cases of primary muscle abscesses attributed to tropical myositis in Jamaica, found 4 to be situated in the paravertebral muscles and 3 in the anterior abdominal wall. Coagulase-positive *Staph. aureus* was found to be the commonest organism cultured in these cases. Furthermore, 47% of cases in his series were under 15 years of age. Thus the lesions occurring in our series may well be related to a myositis of some sort.

Mason-Bahr[5] found staphylococci to be the commonest infecting organism in his series and also noted that most cases suffered from malnutrition or from some chronic disease such as syphilis, malaria or parasitic infection. Jeliffe[6] suggests that this condition results from a subacute septicaemia due to a staphylococcus of low virulence. The portal of entry may be either minor trauma to the feet or insect lesions; malnutrition and chronic disease were thought to be predisposing factors.

The difficulty in diagnosis is noteworthy and can be partly explained by the fact that in 30% of the cases the lesions were extra- or retroperitoneal. The lack of clinical evidence of inflammation is perhaps the biggest factor responsible for inaccurate diagnosis. Daviglus and Rush[2] point out that the frequent delay in diagnosis in cases with retroperitoneal abscesses is often due to lack of constitutional symptoms in spite of the presence of a palpable mass. Bearn[4] notes a similar difficulty in the differential diagnosis of abdominal wall and loin abscesses. The incorrect diagnoses in his series include malignant hepatoma, appendix abscess, fibrosarcoma, Wilm's tumour and perinephric abscess. An awareness of the condition and diagnostic aspiration may help to minimize diagnostic errors, but extensive investigations will remain unavoidable in a certain percentage of cases.

As far as can be ascertained, no similar cases of primary pyogenic psoas abscesses have been recorded in the literature, but reports of pyogenic psoas abscesses secondary to perforated appendicitis[7,8] or to pathology of the descending colon[9] have appeared. None of our cases had evidence of pre-existing pathology. Kark[10] reports 5 cases of an abscess in or deep to the iliacus muscle, but all his cases were adult men and in all a definite history of a violent abduction strain to the thigh was obtained.

As is illustrated in this review, primary pyogenic psoas abscess in children presented a very definite clinical entity. Classically the patient complains of pain in the loin or lower abdomen of a few days' duration, often associated with anorexia, malaise and a definite limp. Psoas spasm is invariably present and scoliosis is a common finding. The diagnosis can be made on clinical features in the majority of cases, although a tuberculous or pyogenic vertebral osteitis with associated psoas sheath abscess should be excluded by radiological investigation.

Treatment consists of surgical incision and drainage under antibiotic cover and bed rest. The lesion is approached through an anterolateral muscle-cutting incision and extraperitoneal dissection. Often the psoas muscle appears merely oedematous and no obvious abscess can be seen. Only when the substance of the muscle is explored is the abscess found. Results are excellent.

The exact cause of these abscesses still remains obscure.

SUMMARY

A review of 55 cases of pyogenic abdominal wall abscesses and 7 primary pyogenic psoas abscesses admitted to Red Cross War Memorial Children's Hospital, Cape Town, during the 7-year period 1958 - 1964 is presented.

The clinical features, sites and diagnostic difficulties are discussed. The possible aetiology and pathogenesis are considered. Primary pyogenic psoas abscess is described as a clinical entity.

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