Unusual association of diseases/symptoms

An abdominal mass in a 4-year-old child

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Summary

The author describes a 4-year-old boy who presented to the accident and emergency department after a mass in his abdominal wall had been rapidly enlarging for at least a week. There was a delay in management due to difficulty reaching the diagnosis. Once obtained, a CT scan revealed the true diagnosis; an infected intramuscular haematoma arising from the right abdominal oblique muscles. This was large enough to displace the right lobe of the liver medially. The patient was treated with surgical drainage and intravenous antibiotics.

BACKGROUND

Abdominal abscesses are a common presentation to surgical teams. Abscesses this large, however, are less common in immuno-competent children. Abdominal masses of this size, seen by paediatricians and without a history of trauma are usually neoplastic. This calibre of abscess in a child is infrequently reported in the literature.

CASE PRESENTATION

A 4-year-old boy was brought to the accident and emergency department by his parents with abdominal swelling and fever.

The parents reported the boy to be irritable for 1 week. On the day of presentation it was noted that when carried or lifted the boy was in pain. A large swelling in the upper right side of his abdomen was first noticed when he was taken to the toilet by his mother. On the day of admission he developed a fever (temperature above 38°C) but prior to that was active and eating well. He had been opening the bowels normally and passing urine without haematuria. The parents had denied that he had any respiratory symptoms including shortness of breath, cough or wheeze. There was no history of foreign travel, trauma, night sweats or rashes.

Medical history was unremarkable and he was on no regular medication.

He had two elder sisters who were both well and there was no significant family history.

On admission, temperature was 38.1°C, heart rate was 137 beats/min, respiratory rate was 36 breaths/min, oxygen saturations in air were 97%. Cardiovascular and respiratory examinations were unremarkable. On examination of the abdomen there was an obvious swelling in the right upper quadrant visible from the foot of the bed. The skin overlying the mass was of normal colour and the patient was hot to palpation. There was a smooth, firm mass in the right upper quadrant and extended to four fingers below the costal margin. It was not possible to palpate above the mass. It was tender to palpation. The remaining abdomen was soft and bowel sounds were

present. Smoothly enlarged lymph nodes were palpable in the groin bilaterally.

The parents were able to give a thorough and detailed history and were cooperative with the staff at all times. They were anxious to know the cause of the swelling and fever and felt guilty they had not noticed it sooner.

INVESTIGATIONS

Initial investigations by the paediatricians included an elevated C-reactive protein of 128 mg/l with normal white cell count, liver function and renal function tests were normal, haemoglobin 8.9 g/dl, platelets 607×10^9 /litre. Blood cultures (taken due to the fever on admission) were negative. As hepatitis was a differential diagnosis, liver serology was tested. Cytomegalovirus, Epstein-Barr virus and hepatitis C/B were negative. There was no haematological evidence of immune-compromise.

Initial ultrasound scan (USS) of the swelling reported an enlarged liver and with a well-defined cystic lesion measuring $102 \times 77 \times 79$ mm with low-level echoes within the right lobe. Colour flow doppler was not demonstrable. The kidneys and spleen appeared normal. With the clinical information at this time the primary differential diagnosis was hepato-renal carcinoma, and this was communicated with the parents. The parents were clearly distressed at the potential diagnosis. The child was then referred urgently to the John Radcliffe Hospital for further investigations.

At the John Radcliffe Hospital, a CT scan was performed. The scan showed a large, thick-walled, cystic lesion ($97 \times 71 \times 120$ mm) arising from the right abdominal oblique muscles rather than the liver as previously thought. The lesion displaced the right lobe of the liver medially but did not extend into it. The muscle was enlarged from the level of T10 to the pelvic brim with overlying subcutaneous oedema. Appearances were consistent with an infected intramuscular haematoma of the abdominal muscles rather than malignancy as first thought (figures 1 and 2).

Figure 1 Transverse section of CT abdomen demonstrating intramuscular haematoma.

DIFFERENTIAL DIAGNOSES

The differential diagnoses prior to imaging included hepato-renal carcinoma, hepatitis and an abscess.

TREATMENT

The patient had an ultrasound-guided drain inserted under a general anaesthetic. This yielded 300 ml green pus. The pus grew *Staphylococcus aureus*, sensitive to erythromycin. The patient was treated with intravenous antibiotics.

Figure 2 Axial section of CT abdomen demonstrating intramuscular haematoma.

OUTCOME AND FOLLOW-UP

The initial drain, inserted under ultrasound guidance, was left in situ for 7 days. The abscess was recollected within the following week and required further drainage under general anaesthetic with a larger surgical drain. He continued to be covered with intravenous antibiotics during this time. The surgical drain was removed after a repeat USS showed no further recollection. He remained an inpatient for a total of 3 weeks.

He was then followed up in an outpatient clinic with serial ultrasounds. Three months after the initial diagnosis he returned to school where is currently in good health.

Of interest, on retrospective history taking, the parents recalled an incident where the patient had fallen off his bicycle, 6 weeks prior to the admission striking his abdomen on the handle bars. This was the presumed aetiology of the haematoma.

DISCUSSION

The initial clinical picture, without imaging, led the paediatricians to consider a neoplastic cause of the mass. This was communicated with the parents and caused much distress. The delay in the diagnosis was felt to be due to incomplete initial history (no trauma recalled by the parents) and also the time delay in getting a CT scan. Making a diagnosis of intramuscular abscess in children can prove to be difficult when going from the clinical examination alone and it is important to exclude intra-abdominal lesions, for example, neoplasms.¹ Although USS was an appropriate initial investigation in this case,² a CT scan localised and identified the origin of the mass. Following the CT scan, surgical drainage and intravenous antibiotics could be started.

Learning points

- ▶ Rather than reporting a rarity, the aim of the report is to highlight the less common condition in children, and also to make the reader think about the impact of the level of detail and interrogation required in their histories. In addition, to consider the impact on families and patients of communicating presumed diagnoses. This should be done with caution and sensitivity until true diagnosis is established.
- ▶ The final learning point, especially when working with vulnerable patients, is to always consider non-accidental injury in histories where there are delayed presentations or inconsistencies within the history.

Competing interests None.

Patient consent Obtained.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Counsell H. An abdominal mass in a 4-year-old child. *BMJ Case Reports* 2012;10.1136/bcr-2012-006561, Published XXX

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