

Chronic myeloid leukaemia presenting as traumatic haemoperitoneum and duodenal injury

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A 13-year-old boy presented with an acute abdomen after a dubious blunt abdominal injury. Evaluation at the accident and emergency department revealed the presence of haemoperitoneum. CT scan and a subsequent duodenography confirmed an accompanying duodenal hematoma and splenomegaly, but no solid organ injury was detected. As the child remained haemodynamically stable, a conservative management was adopted. Leucocytosis and thrombocytopenia were found on further investigation, which led to a final diagnosis of Philadelphia chromosome positive chronic myeloid leukaemia. We speculate that the underlying haematological malignancy in this case might have contributed to the florid intra-abdominal signs of injury. A careful search for a systemic illness would be useful in the management of childhood abdominal trauma, especially when the account of injury is dubious or apparently trivial. (*Hong Kong j.emerg.med.* 2000;7:236-237)

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Case

A previously healthy 13-year-old boy presented to the accident and emergency department with acute epigastric pain. He claimed that he had fallen from a flight of 30 steps. However, there were no superficial bruises or abrasions. His vital signs were satisfactory with a blood pressure of 117/61 mmHg and a pulse rate of 113 per minute. There was localised tenderness over the epigastrium. The bowel sounds were decreased. Bedside ultrasonography revealed the presence of free fluid at the Morrison's pouch, which was confirmed to be fresh blood on paracentesis. An emergency non-contrast CT scan showed the additional signs of duodenum swelling at the second part and an enlarged spleen. However,

no evidence of injury to the liver, spleen or the pancreas could be seen. A subsequent duodenogram confirmed a corresponding partial duodenal obstruction, compatible with a duodenal hematoma. The serum amylase was not elevated and the hepatic transaminases were normal.

As the patient was haemodynamically stable, he was managed conservatively with close monitoring of the vital signs. Further investigations revealed the following haematology: haemoglobin 9.4 g/dL, platelet $192 \times 10^9/L$, white blood cells $109.4 \times 10^9/L$ (to include differential counts). The coagulation screening was normal. Bone marrow examination showed a hypercellular marrow with predominant granulopoiesis and left shift, compatible with the diagnosis of chronic myeloid leukaemia in chronic phase. Cytogenetic study confirmed the presence of Philadelphia chromosome.

The abdominal signs gradually subsided without surgical intervention. The child came from a family whose parents had divorced. He lived with his father who was working long hours and gave no emotional support. The patient ended up dropping out from school and was involved with some gangsters and delinquents. He eventually admitted that he had

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been punched in the abdomen the day he was admitted, but he refused to talk about the details of the fighting. The child subsequently received an unrelated bone marrow transplantation for blastic transformation and he remained in haematological and cytogenetic remission two years after the transplantation.

Discussion

Chronic myeloid leukaemia (CML) belongs to the myeloproliferative disorders. It is characterised by a marked expansion of the granulocytic mass in both the peripheral blood and the bone marrow. In over 90% of the cases, a reciprocal translocation involving the long arms of the chromosomes 9 and 22 can be found on cytogenetic study. Its clinical course is often marked by an initial indolent chronic phase that gradually evolves into an aggressive blastic transformation akin to acute leukaemia, with or without an intervening acceleration phase. Morphological remission can usually be induced with chemotherapy or interferon alpha, but definitive treatment relies on a successful allogeneic bone marrow transplantation.

CML is most often seen in adult in their fifth or sixth decade of life. In the paediatric population, CML only constitutes less than 5% of childhood leukaemias.¹ Children with CML have similar symptomatology as that of adults. Thus, during the chronic phase of the illness, which may last for three to four years, the affected child may be relatively asymptomatic. Nevertheless, the early stage of the disease is marked by splenomegaly and leukocytosis, which can be detected "incidentally" if a clinical examination or a blood test is conducted.

Acute abdominal emergencies in leukaemic patients tend to occur during chemotherapy. These are usually infectious in origin and include neutropenic colitis or pseudomembranous enterocolitis with or without bowel perforation or obstruction. Gross hepatomegaly associated with ascites as a result of chemotherapy induced veno-occlusive disease is an occasional complication.² Rupture of a parenchymal organ with resultant haemoperitoneum is exceedingly rare. Three cases of spontaneous rupture of the spleen in patients with CML has

been reported,³⁻⁵ including a 10-year-old boy.⁵ Interestingly, in all three cases, splenic rupture was the first presenting feature. A 35-year-old man died³ while the other two patients survived after surgery.^{4,5}

The origin of bleeding in the peritoneum was obscure in our case, but the grossly enlarged spleen would be the most likely source. The initial account of accidental fall from the child was not reliable, given that there were no superficial signs of injury. The simultaneous finding of duodenal injury, which by itself is a sign of significant abdominal impact,⁶ and the subsequent confession of the patient point to a direct blow to the epigastrium as the most likely mode of inflicted trauma. It was most likely that the spleen, which was pathologically enlarged, was injured during the injury. Vascular enhancement during computed tomography, which had been omitted in this case, might have provided the important clue to the diagnosis.⁷

Blunt abdominal injuries in children are an intriguing challenge to the medical staff of the emergency department. A search for systemic illness or a suspicion of abuse is indicated when the history of trauma is dubious or unusually trivial.

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