

# Appendicular mass complicating acute appendicitis in a patient with dengue fever

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## SUMMARY

Abdominal pain with dengue fever can be a diagnostic challenge. Typically, pain is localised to the epigastric region or associated with hepatomegaly. Patients can also present with acute abdomen. We report a case of a girl with dengue fever and right iliac fossa pain. The diagnosis of acute appendicitis was made only after four days of admission. An appendicular mass and a perforated appendix was noted during appendectomy. The patient recovered subsequently. Features suggestive of acute appendicitis are persistent right iliac fossa pain, localised peritonism, persistent fever and leucocytosis. Repeated clinical assessment is important to avoid missing a concurrent diagnosis like acute appendicitis.

## KEY WORDS:

*Dengue fever; appendicular mass; acute appendicitis*

## INTRODUCTION

Dengue fever is a dynamic disease which usually progresses through 3 clinical phases. It begins with a febrile phase which lasts between 2-7 days. This is followed by the critical phase which occurs towards the end of the febrile phase or around defervescence and is associated with an increase in capillary leakage and complications like shock, bleeding or organ dysfunction. After 24-48 hours of defervescence, the patient will enter into the recovery phase with reabsorption of extravascular fluid and recovery of leukopenia and thrombocytopenia. Abdominal pain in dengue fever can present as a diagnostic challenge. It has been reported that up to 77% of dengue fever patients have non-specific abdominal pain.<sup>1</sup>

Typically, the pain is localized to the epigastric region or associated with hepatomegaly. Both these features usually occur during the critical phase and are warning signs which preclude severe dengue or shock. Dengue fever can also present as an acute abdomen due to perforated gastric ulcer, acute pancreatitis, acute cholecystitis, acute appendicitis or non-specific peritonitis.<sup>1</sup> This case report highlights the importance of frequent clinical assessment and having a high index of suspicion in a patient with dengue fever and abdominal pain to avoid missing a concurrent surgical diagnosis which can result in serious complications.

## CASE REPORT

A 17-year-old girl was referred to us from a nearby district hospital for dengue fever with warning signs. She presented initially with fever, chills and body aches for six days associated with two days of lower abdominal pain and vomiting. She did not have diarrhoea, dysuria, headache or retro-orbital pain. Apart from having her menses which was not excessive, she had no other bleeding tendencies. As her fever persisted throughout the last six days, she was considered to be still in the febrile phase. Patient had no significant prior medical illness and was a student. She was staying in an area which was having a dengue fever outbreak and her mother was also admitted for dengue fever. Both the patient and her mother tested positive for dengue non-structural 1 (NS-1) antigen and dengue IgM but negative for dengue IgG.

Her temperature on arrival was 37.5°C, blood pressure 129/75mmHg and pulse rate 75 beats per minute. She was pale but not jaundiced. Examination of her respiratory and cardiovascular system did not reveal any abnormalities. There was tenderness over her lower abdomen but no guarding. No rashes were seen over her body.

She was noted to have leukopenia (WCC 3,800/ $\mu$ L) and hypochromic, microcytic anaemia (Hb 7.4g/dl, MCV 62.3fl, MCH 20.3pg) with haematocrit of 26%. Her platelet count was within the normal range (168,000/ $\mu$ l). Her full blood picture was suggestive of iron deficiency anaemia but serum iron was only slightly low (5 $\mu$ g/l, reference range: 6.6-26 $\mu$ g/l). As she was stable clinically, we attributed her anaemia to a possible underlying haemoglobinopathy and not secondary to dengue haemorrhagic fever. Patient's renal profile and transaminases were normal. Her transaminases remained normal throughout her stay. Urine microscopy only showed some red blood cells which was attributed to her menses.

Patient was started on 1.5 times maintenance fluid using intravenous normal saline drip and given IV Metochlorpramide 10mg for her vomiting. Full blood count was monitored six hourly. Her vomiting resolved after admission but her lower abdominal pain persisted and became more localised over the right iliac fossa. On the second day of admission (7th day from the onset of fever), she was referred to the surgical team to rule out acute appendicitis. Upon palpation of the abdomen, there was tenderness over the right iliac fossa but no guarding nor other

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signs typical of acute appendicitis like rebound tenderness and Rovsing's sign. Based on the examination findings, acute appendicitis was thought to be less likely and further imaging like ultrasound of abdomen was not ordered.

On day three of admission (8th day from onset of fever), patient remained febrile with temperatures reaching 40°C. Her vital signs remained stable. Her abdominal pain persisted but did not worsen. She also started to have diarrhoea. Her white cell count increased to 9,640/ $\mu$ l. Her platelet count did not fall below 150,000/ $\mu$ l and there was no evidence of haemoconcentration. She was started on IV Ceftriaxone 2 g daily and referred for a gynaecology opinion. Pelvic ultrasound done was normal. The patient was transfused 1 pint of packed cells and her haemoglobin increased to 8.8 g/dl.

On day-4 of admission (9th day from onset of fever), the patient had worsening of right iliac fossa pain. This was associated with guarding and a positive Rovsing's sign. A diagnosis of acute appendicitis was made and the patient underwent emergency open appendectomy. Intra-operative findings showed the omentum covering the terminal ileum, caecum and appendix forming an appendicular mass. The appendix was inflamed, perforated and contaminated with 5mls of pus. The terminal ileum appeared normal. The appendix was surgically removed and the area irrigated with normal saline. The surgical incision was closed without any drainage catheter. Culture of the pus grew *Escherichia coli* which was sensitive to most cephalosporins, *Augmentin*, *Unasyn*, Ciprofloxacin and Gentamicin. Patient's blood culture showed no growth. Histopathology of the surgical specimen confirmed acute suppurative appendicitis.

Patient made prompt recovery post-operatively with fever subsiding the following day. She was discharged on day-3 post-surgery after completing five days of IV Ceftriaxone. Her white cell count was 7,970/ $\mu$ l and platelet count 238,000/ $\mu$ l prior to discharge.

## DISCUSSION

Understanding the three clinical phases of dengue fever is crucial as any unexpected deviation from its natural history like prolonged fever or persistent abdominal pain should raise suspicions in the managing clinician of complications or concurrent illnesses. Although cases of acute appendicitis associated with dengue fever have been reported before, it is well known that dengue fever itself can present with right iliac fossa pain which can mimic acute appendicitis presumably due to lymphoid hyperplasia and mesenteric adenitis.<sup>2</sup> As illustrated by our case, there can be difficulty and delay in coming to a diagnosis of acute appendicitis in dengue fever especially when the signs are more subtle.

Indicators which would suggest acute appendicitis are persistent right iliac fossa pain, evidence of localized peritonism like guarding, persistent fever and leucocytosis. Imaging modalities such as ultrasound or CT scan of the abdomen may be required to help elucidate the cause of the abdominal pain in doubtful cases. We were fortunate that our case had no appreciable drop in the platelet count as this would have led to further delay in surgery. In the event of thrombocytopenia and coagulopathy, bleeding intra- or post-operatively may complicate surgery.

Intra-operative findings in our case confirmed a perforated appendix with the formation of an appendicular mass. Appendicular mass is a complication of acute appendicitis and usually occurs when there is a delay in diagnosing acute appendicitis or in performing appendectomy. Its incidence has been reported in up to 7% of cases of acute appendicitis.<sup>3</sup> The formation of an appendicular mass prevents frank peritonitis from occurring. The patient might have ended up with serious complications if appendectomy was delayed further or if peritonitis with septicaemia were to occur. There are differing preferences on how to manage an appendicular mass. Based on clinical judgment and the presence of abscess formation, the surgeon may elect to perform immediate surgery or adopt a more conservative approach with antibiotics and percutaneous drainage of larger abscesses.<sup>3</sup>

## CONCLUSION

Dengue fever can present with non-specific abdominal pain as well as acute abdomen. As illustrated in our case above, dengue fever can occur concurrently with acute appendicitis. There is a risk of delay in the diagnosis of acute appendicitis and subsequent appendectomy. Indicators which would suggest acute appendicitis are persistent right iliac fossa pain, evidence of localised peritonism, persistent fever and leucocytosis. Perforation of the inflamed appendix is potentially fatal and can be complicated by the formation of an appendicular mass.

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