Gallbladder hydrops caused by
scarlet fever
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Section: Paediatric radiology
Area of Interest: Lymph nodes Biliary Tract / Gallbladder
Procedure: Diagnostic procedure
Procedure: Dacryocystography
Imaging Technique: Ultrasound
Special Focus: Acute Dilatation Case Type: Clinical Cases
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Patient: 6 years, male

Clinical History:
A 6-year-old boy presented with abdominal pain which had developed over the past 4 days. At the physical examination, he located the pain in the right iliac fossa. The stools were normal. He had been treated with benzathine penoxymethylpenicillin in the previous 72h because of a positive Streptococcus test.

Imaging Findings:
An abdominal ultrasound was requested due to a clinical suspicion of appendicitis. The appendix was sonographically unremarkable. The ultrasound exam showed a distended gallbladder with a longitudinal diameter of 10cm and transverse measurement of 4.5cm. The wall thickness appeared normal and there were neither gallstones nor sludge. In addition, the liver was slightly enlarged and there were multiple mesenteric lymph nodes with a short axis of 1cm.

Blood tests revealed hypertransaminasemia, hyperbilirubinemia and inflammatory markers.

The clinical course was unremarkable with resolution of the gallbladder dilatation and hypertransaminasemia within 13 days following treatment with intravenous cefotaxime and metronidazole.

Discussion:
Scarlet fever is a common paediatric infection caused by b-hemolytic group A Streptococcus. The clinical signs include pharyngitis, “strawberry” tongue, fever and generalized maculopapular rash. The complications of this infection are rheumatic fever, pneumonia, otitis media, sepsis, osteomyelitis, glomerulonephritis and suppurative consequences. Other more unusual complications are hepatitis, gallbladder hydrops and splenomegaly [1]. It has been postulated that the association between hydrops and scarlet fever lies in the systemic intercurrent conditions (fever) that help the development of bile stasis [1]. Some authors point out that mesenteric adenopathy is the source of the obstruction of the biliary tree.

Hydrops of the gallbladder refers to an overdistended gallbladder without biliary calculi, acute local inflammation or associated congenital defects. The method of choice for investigating suspected gallbladder pathology is ultrasonography. It evaluates the pain source and assesses for possible complications in the liver, pancreas and kidneys [3]. The bile is characteristically sterile (echo-free) and extrahepatic conduits are normal in caliber, in
contrast with a gallbladder mucocele. The absence of an inflammatory component (a thick wall and halo produced by oedema) is what confers the good prognosis, which differs from an acalculous acute cholecystitis [2]. A calculous cholecystitis is ruled out when there are no gallstones present or inflammation in the wall.

Although the aetiology is unknown, it is often associated with the Kawasaki illness and less frequently with scarlet fever, typhoid fever or leptospirosis. It can also be seen in extended burns, sepsis or total long parenteral nutrition [3].

The clinical presentation of gallbladder hydrops includes pain in the right upper quadrant with palpable mass. In children, however, locating the pain may be difficult. It can start with colicky pain, nausea and vomiting [3].

Conservative treatment is preferable with special emphasis on the underlying illness, followed by serial ultrasonographic examinations. If there are signs of imminent rupture of the gallbladder, aspiration or drainage by cholecystostomy could be considered [3]. The prognosis is excellent; spontaneous resolution occurs in a few weeks [2].

Key points: firstly, it is important to take into account the clinical history of the patient and secondly, we should focus on the inflammatory component in the ultrasound, because gallbladder hydrops and cholecystitis are managed differently.

**Differential Diagnosis List:** Gallbladder hydrops, Acalculous cholecystitis, Calculous cholecystitis, Gallbladder mucocele

**Final Diagnosis:** Gallbladder hydrops

**References:**

Description: Ultrasound shows a distended gallbladder

Origin: Aloa I, Department of Radiology, HUA Txagorritxu, Vitoria, Spain.
Description: A thin gallbladder wall without inflammation signs  

Origin: Aloa I, Department of Radiology, HUA Txagorritxu, Vitoria, Spain.
Description: Echo-free gallbladder

Origin: Aloa I, Department of Radiology, HUA Txagorritxu, Vitoria, Spain.
Description: Multiple mesenteric nodes

Origin: Aloa I, Department of Radiology, HUA Txagorritxu, Vitoria, Spain.
Description: Resolution of the gallbladder distension. Origin: Gamarra A, Department of radiology, HUA Txagorritxu, Vitoria, Spain.