

# Retrocecal Ruptured Appendicitis Complicated with Perinephric Abscess

B Hidri<sup>1</sup>, D. Aliu<sup>2</sup>, D. Alushani<sup>3</sup>, E. Çapo<sup>4</sup>

<sup>1,2,4</sup> Service of Radiology in University Hospital Center "Mother Theresa", Tirana, Albania

<sup>3</sup> Service of Pediatric Surgery in University Hospital Center "Mother Theresa", Tirana, Albania

**Abstract:** Introduction: perinephric abscess due to perforated retrocecal appendix is a rare complication, which can now be detected by preoperative imaging study. Case presentation: this is a retrospective case report of a 5-year-old boy hospitalized in the department of infectious disease because of high fever and abdominal pain. A US (ultrasonography) was performed and a fluid collection around the right kidney was detected. Inflammatory changes were also seen in the right hypochonder. Then a CT (computed tomography) was performed and perinephric abscess due to perforated retrocecal appendicitis was confirmed. Surgical remove resulted in the best treatment. According to the surgeon the abscess was deep and difficult to remove. Conclusion: Right perinephric abscess due to perforated retrocecal appendicitis is a rare complication, which requires special attention. Surgical treatment seems to be the appropriate treatment

**Keywords:** Perinephric abscess, Retrocecal appendicitis, Ruptured retrocecal appendicitis, Ultrasonography, Computed tomography

## 1. Introduction

Acute appendicitis is the most common condition requiring emergency abdominal surgery in the pediatric population. It is one of the major causes of hospitalization in children. The condition typically develops in older children and young adults. It is rare under the age of 2 years. Acute appendicitis is a diagnosis that can be made on clinical symptoms and signs but can often be extremely challenging. Difficulties arise particularly when the presentation is atypical like retrocecal appendix. In this case the clinical manifestations are also atypical. Ultrasonography and abdominal CT scan are the preferred diagnostic tools.

## 2. Case Presentation

A 5-year-old boy presented to the emergency Department with history of abdominal pain and fever for the last two weeks. He was treated for urinary tract infection in last two weeks. Physical examination revealed an acute ill-looking child with a body temperature over 39°C. Palpation of the abdomen did not reveal any focal or diffuse tenderness; there was no organomegaly. Laboratory data indicated leukocytosis with predominant neutrophils. The C-reactive protein level and ESR were elevated; leucocytes were seen in the urine test. Based on these changes the pediatrician thought of an upper urinary tract infection. He asked an Ultrasonography that showed a fluid collection around the right kidney.[fig.1] Retrocecal appendicitis with a appendicolith was detected [fig 1].



**Figure 1:** Transvers imaging of US showing retrocecal appendicitis and right perirenal fluid collection

Multidetector row CT of abdomen was performed to determine the nature and extent of the right perinephric collection [figure 2, 3].





**Figure 2, 3:** Axial CT images with intravenous contrast showing perirenal fluid collection and ruptured retrocecal appendicitis

Axial ct rows with sagittal and coronal plane reformations showed a fluid collection around the right kidney involving the perinephric space. Psoas muscle was normal. These findings were consistent with ruptured retrocecal appendicitis resulting in right perinephric abscess. Patient was operated and pus was drained from the retroperitoneum around right kidney. Appendicectomy was performed and ruptured inflamed appendix was seen in the retroperitoneum.

### 3. Discussion

Acute appendicitis is one of the frequently seen emergencies in the pediatric hospitals. Nevertheless, its diagnosis and management is often challenging in infants and neonates. The diagnosis is frequently made at operation performed for the complications [1,2,3]

It is estimated that about 8% of children who present with abdominal pain are ultimately diagnosed with acute appendicitis. It is very uncommon in infants and neonates. Only 2% patients treated for acute appendicitis are below 2 years of age. The rate of perforation of appendix is 30% in adults as compared to 98% in infants and neonates [1,2,3].

The common clinical features in infants who present with appendicular perforation are abdominal pain, vomiting, fever, lethargy, and reluctance to feed. Diarrhea is not uncommon [4] Presence of diarrhea can be misleading and is usually diagnosed as gastroenteritis. These are nonspecific features. In case of delayed diagnosis, the appendix may perforate and result in localized or generalized peritonitis, appendicular abscess and appendicular mass. [2, 3].

Elevations in the peripheral white blood cell count (WBC) and C-reactive protein (CRP) levels have been noted in children with appendicitis. The urinalysis is abnormal in some cases. However, these findings are variable and nonspecific. [5]. Observational report describing children with nontraumatic abdominal pain who were evaluated in an emergency department, for those who had either increased WBC or elevated neutrophil count, the sensitivity and specificity for appendicitis were 79 and 80 percent respectively [6].

Limited studies suggest that CRP may be more sensitive than WBC in identifying both a gangrenous appendix and appendiceal perforation [7,8]. The main statistically significant factors associated with perforated appendicitis are delay in treatment and younger age.[9] Thus, Nance et al[10] reported a 100% perforation rate in 10 children aged 12 months and younger. Efforts to improve early diagnosis are a main concern in the treatment of appendicitis in children.

However, in equivocal cases, imaging with ultrasound and or computed tomography may decrease the rate of negative laparotomy.[ 11,12,13,14] Inflamed appendix may rupture and result in intraperitoneal abscesses in right iliac fossa or pelvis. However, formation of retroperitoneal abscesses remains one of the most serious complications of acute appendicitis and is always associated with perforation of a retrocecal appendix with delayed diagnosis and treatment.[11,12,14,15,16,17] These patients do not present with the classical symptoms of acute appendicitis at the onset of the disease. The average interval between the onset of symptoms and diagnosis that has been reported is more than 15 days.[18] The most effective diagnostic tool in this subgroup of patients is computed tomography (CT).[16] Isolated retroperitoneal abscess formation has always been described in cases with perforated retrocecal appendicitis, which in fact is the commonest location of normal appendix.[18]

Retroperitoneal compartments described include perinephric space, anterior and posterior pararenal spaces and psoas compartment.[19] Perinephric space communicates with the pelvic retroperitoneal space inferiorly and continues superiorly reaching the bare area of the liver on the right side.[19] True extent of the retroperitoneal abscess is well defined by the MDCT, and is of great help for surgical planning. In addition, the drainage of abscess can be achieved by percutaneous and retroperitoneal approach or by laparotomy based on CT findings.[12,18] .Once diagnosed appendectomy followed by adequate drainage of the abscess is the best treatment for the retroperitoneal abscess resulting from the ruptured retrocecal appendicitis.[12,18,17]

### 4. Conclusion

We conclude that the formation of complicated retroperitoneal abscesses involving the perinephric space is a rare but serious complication of perforated acute appendicitis. The mortality rate can be reduced by an early and accurate diagnosis, ideally with MDCT.

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