

## **Eikenella corrodens perirenal abscess resulting from a pancreatic fistula in a patient with chronic pancreatitis. Case report and literature review**

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### **Abstract**

We present a case of a right perirenal *Eikenella corrodens* abscess in a patient with chronic pancreatitis and poor dental hygiene. Endoscopic Retrograde CholangioPancreaticography (ERCP) revealed a pancreatic fistula draining to the right perirenal loge.

The patient was treated with broad-spectrum antibiotics, percutaneous drainage and endoscopic stenting of the duct of Wirsung, stopping the supply of the fistula. A full recovery in our patient was observed.

Considering the uncommon location of the abscess, a review of the different aetiologies of perirenal abscesses and their distribution patterns, and the endoscopic treatment of symptomatic pancreatic fistulas seemed worthwhile. (*Acta gastroenterol. belg.*, 2018, 81, 323-326).

### **Case presentation**

A 55-year old male patient was admitted with a cough, general malaise and fever. Past medical history included chronic obstructive pulmonary disease, alcohol abuse, diabetes and chronic calcific pancreatitis with the formation of pseudocysts since 2009 (Figure 1). Amoxicillin-clavulanic acid therapy was started empirically for signs and symptoms of a basal pulmonary infiltrate. The patient developed abdominal pain and fever in the subsequent week. CT-scan revealed an abscess in the right perirenal loge (Figure 1).



Figure 1. — Right perirenal abscess (red arrow) in the setting of severe chronic pancreatitis (pseudocyst formation (yellow arrow) and calcifications along the duct of Wirsung (blue arrow)).

Abscess fluid analysis revealed a fluid lipase level of 6 U/L – as opposed to the low serum lipase level of 3 U/L – and yielded a positive culture for *Eikenella corrodens*. Repeat blood cultures remained negative. Dental inspection showed poor hygiene yet the transthoracic ultrasound of the heart valves was not suspicious for endocarditis. Given the patient's background of chronic pancreatitis with pancreatic pseudocysts, an ERCP was performed, revealing a fistulous connection to the right perirenal space, which was responsible for the abscess formation in the right perirenal loge (Figure 2).

After a switch to meropenem the patient was treated with trimethoprim-sulfamethoxazole in view of the results of the antibiotic sensitivity testing. He eventually fully recovered thanks to stenting of the Wirsung duct, antibiotic therapy, percutaneous drainage and dental care.

### **The spreading of inflammatory processes of the perirenal space**

Inflammatory processes can spread to the perirenal space through different routes. We describe the basic anatomy of the perirenal space and the pattern of spread in relation to the presented case.

The retroperitoneal space consists of five compartments. One of them is the lateral compartment, consisting of the anterior pararenal, perirenal and posterior pararenal spaces. The perirenal space contains the kidneys and ureters, the adrenal glands, blood vessels and lymphatics. The perirenal space is conally shaped and bordered by the anterior renal fascia (ARf) or Gerota's fascia anteriorly, and by the posterior renal fascia (PRf) or Zuckerkandl's fascia posteriorly (Figure 3a). (1,2)

### **Pancreatic fistula**

In chronic pancreatitis, persistent inflammation and progressive parenchymal destruction give rise to fibrosis,

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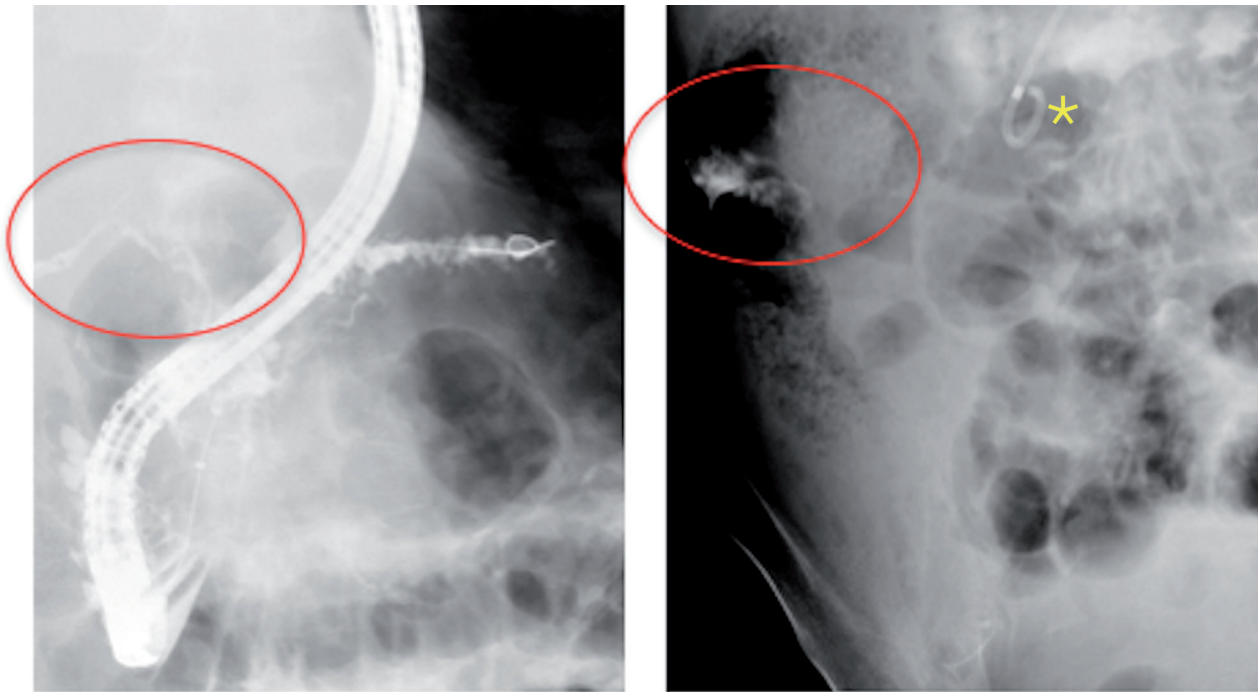


Figure 2. — Wirsungography revealed a fistula trajet and contrast (red circle) in the perirenal space minutes after contrast injection of the duct of Wirsung. The pigtail of the stent placed in the main pancreatic duct is also shown (yellow star).



Fig. 3a. — The right ARf (blue) fuses with the inferior part of the coronary ligament. The PRf (pink) fuses with the posterolateral aspect of the diaphragm (beige), leaving direct contact with the bare area of the liver (A) and the perirenal space (\*) (1).

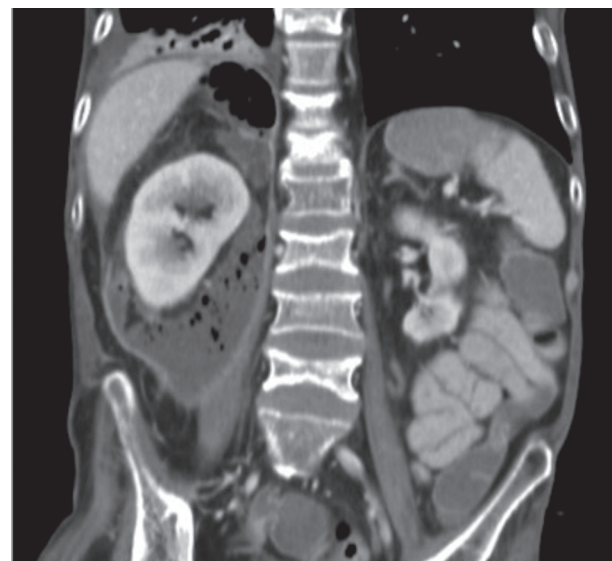


Fig. 3b. — Patient case. Right perirenal abscess and effusion to the right pleural space.

stricturing of the duct with outflow obstruction and ductal hypertension, eventually leading to fistulous drainage along the anatomic fascial planes by the action of activated digestive enzymes on less resistant segments of the duct, and resulting in pseudocyst formation. (3) In the presented case, the pancreatic enzymes seem to have seeped below the anterior renal fascia (ARf, Figure 3a) into the perirenal fatty tissue, creating a fistulous tract in between the pancreatic duct and the right perirenal space and leading to the formation of a perirenal pseudocyst. (3)

### Superiorly

The superior border of the right perirenal space is open to the bare area of the liver and the mediastinum as the right ARf fuses with the inferior coronal ligament and the PRf fuses with the posterolateral aspect of the diaphragm (Figure 3a). As such, communication between the mediastinum and the right perirenal space through small diaphragmatic perforations, lymphatics or through splanchnic foramina of the diaphragmatic crurae is an anatomic fact. (2) In the clinical setting, this would mean that pleural empyema can lead to abscess formation in the right perirenal loge. Or, in reverse, pleural empyema can result from a perirenal abscess. Our patient had a productive cough on admission though insufficient findings on CT-imaging to suspect pleural empyema to be the primary cause of his perirenal abscess (Figure 3b).

### Anteriorly

The anterior pararenal loge is located ventrally of the perirenal loge and contains the pancreas and the retroperitoneal segments of the duodenum and colon. It is separated from the perirenal loge by the anterior renal fascia. However, this classical concept has been challenged by several case reports of duodenal perforation in which air was depicted in the right perirenal loge (4). This finding suggested an alternative ARf anatomy with extension to the duodenum (DII) rather than to the central perivascular retroperitoneum (Figure 4). In this anatomic variant, the duodenum is in direct contact with the right perirenal space. (5) As such, duodenal perforation might cause an abscess in the right perirenal loge.

Following this hypothesis, and the specific set of bacteria found in the abscess collection, a duodenal perforation was ruled out by upper endoscopy.

### Bridging septa, hematogenous and lymphatic

As the perirenal space is extensively supplied by blood from numerous small vessels in the perirenal fat, perirenal abscesses can result by haematogenous spread from a distant site of infection. Other possible routes of spread include the bridging septa and lymphatics. The bridging septa are fibrous lamellae traversing the perirenal fat are intended to support the kidneys. These septa however may act as a conduit or a barrier for the spread of fluid or disease processes. In the case of pancreatitis, the bridging septa act as a conduit for transmission of fluid towards the kidney, as is demonstrated in this case of chronic pancreatitis with fistulisation. Perirenal lymphatic vessels are also a possible pathway for disease spreading of malignant lesions. (5)

### Eikenella corrodens intra-abdominal infections

*Eikenella corrodens* is a slow growing gram-negative bacillus found in the commensal oral, gastrointestinal and

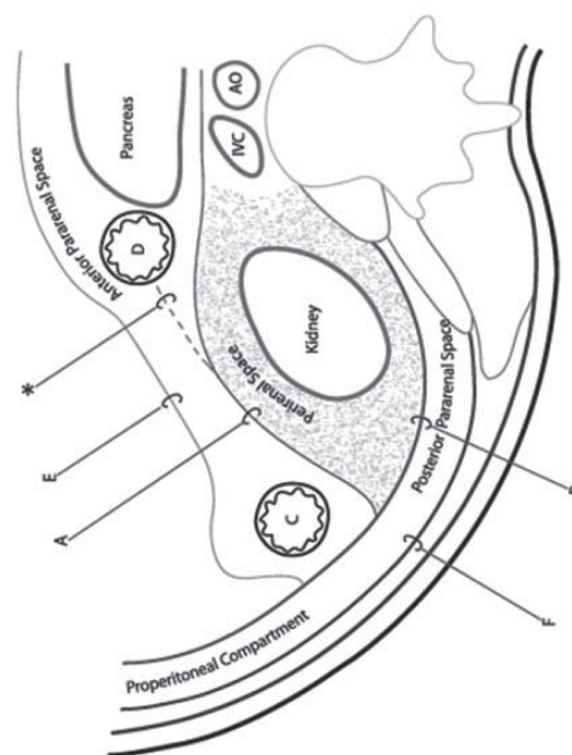


Figure 4. — Alternate course of the ARf (dotted line). A : ARf, B : PRf, C : Colon, D : duodenum, E : parietal peritoneum, F : Transversal fascia (4).

urogenital flora. *Eikenella corrodens* infections are usually indolent, though occasionally they can cause severe invasive infections. Patients with invasive infections usually have an underlying immunocompromising condition or other predisposing factors. In our case, the patient had both diabetes mellitus and poor dental hygiene. *Eikenella corrodens* intra-abdominal abscesses and infected pancreatic pseudocysts are rare, but have been reported previously (6,7).

Given the fact that repeat blood cultures remained negative in our case – even after weeks of incubation –, we suspected a translocation of the *Eikenella corrodens* bacillus from the gastrointestinal tract via the fistula tract to the perirenal space.

### Management of pancreatic fistula and infected pseudocysts

Treatment of pancreatic fluid collections may be merely conservative in asymptomatic patients, with restriction of oral intake and the administration of somatostatin analogues. Symptomatic patients with large or infected pancreatic fluid collections are treated by drainage, either endoscopically (echoendoscopic cystogastro- or duodenostomy with or without transpapillary pancreatic stenting) or percutaneously / surgically (partial resection).

To date, large randomized trials comparing the different options for drainage of pancreatic fluid collections are scarce and the best drainage option remains unclear. A recent systematic review by Yuen

Bun Teoh et al. (9) suggested that echoendoscopic guided drainage has similar efficacy to surgery, but may reduce hospital stay, decrease total cost and improve quality of life. Echoendoscopic guided drainage has the ability to identify and avoid vascular structures between the gastrointestinal lumen and the fluid collection as well as the ability to localize non-bulging lesions. (9,10)

In our case, the abscess collection was located far away from the duodenum or stomach, which deemed echoendoscopic drainage impossible. Therefore we opted for percutaneous drainage with a large drain which was removed after 14 days. Additionally, we performed endoscopic transpapillary pancreatic stenting of the main pancreatic duct. A 7 french Zimmon single pigtail stent (length 10 cm) was inserted in the main pancreatic duct above the site of the partial ductal rupture to bypass the opening of the fistula tract. We leave the stent in situ for one year.

Pancreatic ductal stenting is indicated for treatment of pancreatic fistulas or strictures, to reduce the intraductal pressure and to provide a preferential outflow tract for pancreatic juices towards the duodenum. Complications of pancreatic duct stenting include occlusion, migration, duodenal erosion, bleeding or infection. Overall, pancreatic duct stenting in the case of duct disruption has proven to be a safe and effective treatment. (11)

In the setting of an infected pancreatic fluid collection, pancreatic duct stenting can provide a successful management strategy, in combination with percutaneous drainage and antibiotic therapy, as is demonstrated in this case.

## Discussion

In retrospect, the patient most likely had a pre-existing fistula tract between the main pancreatic duct and the perirenal space due to chronic ductal hypertension in the setting of severe chronic pancreatitis. Surinfection of the perirenal collection caused the fever, general malaise and abdominal pain. The cultured bacillus, *Eikenella corrodens*, was able to cause invasive infection because of our patients' poor health status.

His clinical status only improved after stenting the main pancreatic duct and adding percutaneous drainage to the antibiotic therapy.

## Conclusion

Perirenal abscesses may pose a diagnostic challenge for the physician because of the insidious onset and the aspecific symptoms. Knowledge of the anatomy and different routes of spread may guide the clinician in diagnosing the origin of the perirenal collection. In the case of chronic pancreatitis, a magnetic resonance and/or endoscopic cholangiopancreatography should be performed to detect pancreatic duct disruption or fistulisation. Pancreatic fistula with secondary abscesses can be treated successfully by pancreatic duct stenting, drainage of the abscess collection and antibiotic therapy.

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