



## DIAGNOSTIC DILEMMA: RENAL PSEUDOCYST MASQUERADING AS PYONEPHROSIS.

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### ABSTRACT

**Aims And Objectives Of Study:** 1. To elucidate the diagnostic challenges encountered in a patient initially misdiagnosed with left pyonephrosis, subsequently revealing a rare renal pseudocyst as a consequence of pancreatitis, and to underscore the pivotal role of contrast-enhanced CT in achieving an accurate diagnosis. 2. Emphasize the impact of timely intervention based on the accurate diagnosis, showcasing the improvement in patient outcomes and the importance of avoiding delays caused by misdiagnosis. **Materials And Methods:** 1. A retrospective analysis was conducted on a patient diagnosed with acute pancreatitis initially misdiagnosed as left pyonephrosis, subsequently revealing a perirenal pancreatic pseudocyst. Imaging studies was done including USG and CE-CT abdomen pelvis using GE voluson S8 and Siemens SOMATOM 128 slice respectively. 2. Review of imaging studies, notably ultrasound scans and contrast-enhanced CT images were done using MEDSYNAPSE PACS & formed a crucial component of the study. **Result:** The CE-CT revealed left kidney was grossly enlarged in size with a large well-defined peripherally enhancing collection in the involving the left kidney causing mass effect over the left pelvi-calyceal system and thinned out renal parenchyma. The thinned out residual renal parenchymal tissue shows enhancement on post contrast images. However there is prompt excretion of the contrast from the left kidney. Mild perinephric fat stranding is noted with mild reactive thickening of the anterior and posterior renal fascia. A diagnosis of sequelae of necrotizing pancreatitis with walled off necrosis, peri-pancreatic and renal pseudocysts was the final radiological diagnosis. **Conclusion:** The diagnostic odyssey of the presented case serves as a testament to the intricate nature of abdominal pathologies and the critical role of contrast-enhanced CT in achieving accurate diagnoses. The insights gained from this case contribute to advancing medical knowledge and advocate for a nuanced, imaging-driven approach in the evaluation of complex abdominal presentations associated with pancreatitis.

**KEYWORDS :** Splenic Pseudocyst, Pyonephrosis, Pancreatitis, Complication

### BACKGROUND:

Acute pancreatitis denotes an abrupt inflammatory state, exhibiting a continuum of severity and manifesting diverse local and systemic complications. Gallstones and alcohol consumption rank as the foremost and second most prevalent etiological factors, respectively, in acute pancreatitis. Upon stratification based on gender, additional variations in the disease profile are discernible.<sup>(1)</sup> This increase is thought to be secondary not only to nationwide increases in obesity and the incidence of gallstones, but also to more sensitive and more frequently used laboratory testing.

Pancreatic pseudocysts refer to accumulations of fluid enclosed by a fibrous wall. Their potential to traverse any route of least resistance arises from the leakage of enzymatic secretions into the pancreatic and peripancreatic tissues. Instances of pseudocysts extending into the perirenal space are infrequent.

### Case Report:

A 24-year-old male presented from a previous diagnostic centre with dull abdominal pain and intermittent vomiting for period of three months. Initial evaluations, including ultrasound, led to a diagnosis of left pyonephrosis, prompting further investigations and treatment for a presumed renal infection. Despite treatment for pyonephrosis, the patient's symptom persisted, and was referred to this institute & a re-evaluation of the imaging studies was done. An organized case record form was used to document the imaging characteristics and the final diagnosis.

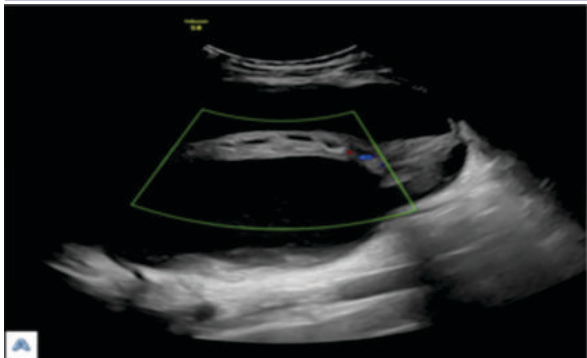
On ultrasound hypoechoic to anechoic collection, with dependent low-level echoes representing debris, were noted in left renal fossa causing mass effect on the residual renal parenchyma; however vascularity in it was noted in colour Doppler study. Similar collections were noted in peripancreatic region.

The left kidney was significantly enlarged (17x12 cm) with a large, well-defined peripherally enhancing collection causing mass effect on the left pelvi-calyceal system. This led to thinned out renal parenchyma, although the residual tissue exhibited enhancement on post-contrast images.

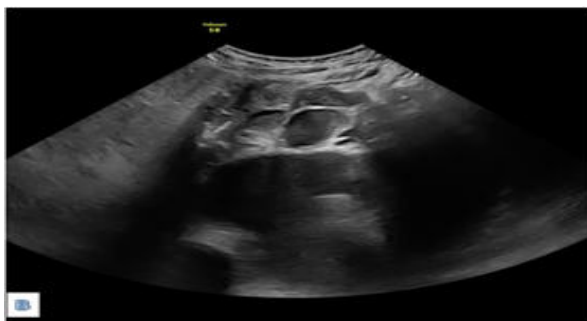
Despite these changes, there was prompt excretion of contrast from the left kidney. Mild perinephric fat stranding and slight reactive thickening of the anterior and posterior renal fascia were also noted.

On CE-CT the pancreas exhibited enlarged neck and body regions, while the head and tail appear normal. Multiple well-circumscribed, enhancing collections (5) are observed in the pancreatic parenchyma (neck and proximal body). Additionally, similar collections (3-4) are noted in the peripancreatic region along the greater curvature of the stomach.

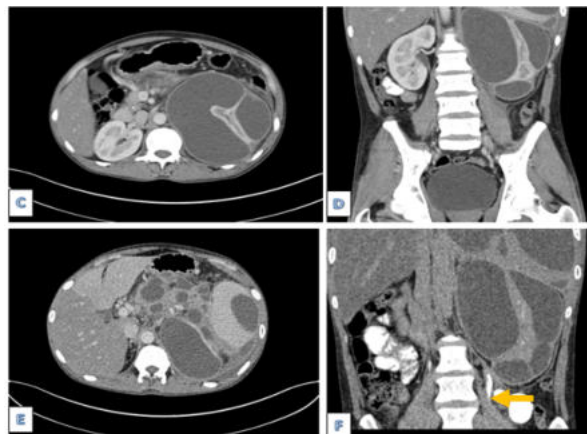
The constellation of findings described above led to the final diagnosis of sequelae from necrotizing pancreatitis, including walled-off necrosis, peri-pancreatic, and renal pseudocysts.



**Figure (A):** Hypoechoic to anechoic collection with dependent low-level echoes, indicative of debris, was observed in the left renal fossa. This collection exerted a mass effect on the residual renal parenchyma. Notably, vascularity within the thinned out parenchyma was identified during the colour Doppler study.



**Figure (B):** Similar hypoechoic to anechoic collection with dependent debris were noted in peri pancreatic region in neck and proximal body.



**Figures (C) & (D):** The left kidney displayed substantial enlargement (17x12 cm) accompanied by a sizable, well-defined peripherally enhancing collection that exerted a mass effect on the left pelvi-calyceal system. This resulted in thinned out renal parenchyma; however, the residual tissue demonstrated enhancement on post-contrast images. **Figure (E)** Similar well-defined enhancing collections were identified in pancreas & peripancreatic region. **Figure (F):** Timely excretion of the contrast agent from the left kidney was noted.

**DISCUSSION:**

Acute pancreatitis, a common gastrointestinal ailment, presents significant emotional, physical, and financial burdens. Its management is challenging due to unclear origins, limited effective treatments, and unpredictable outcomes, with a noted rise in incidence.<sup>(3)</sup> Pseudocyst occurrence parallels pancreatitis, with a stronger association in alcohol-induced pancreatitis compared to non-alcohol-related cases. Alcohol-related pancreatitis accounts for 59%

78% of pseudocysts, particularly in regions with high alcohol consumption.<sup>(4)</sup> As the comprehension of acute pancreatitis and its sequelae evolved, the 1992 Atlanta Classification became obsolete due to certain definitions proving to be ambiguous. In response to this, the Atlanta Classification underwent a revision in 2012, aiming to integrate the most current understanding of the disease.<sup>(5)</sup>

| Collection | Time after Onset of Pain (wk) | Pancreatitis Subcategory | Location                       | Imaging Features  |
|------------|-------------------------------|--------------------------|--------------------------------|---|
| APFC       | ≤4                            | IEP                      | Extrapancreatic                | Homogeneous, fluid attenuation, conforms to retroperitoneal structures, no wall |
| ANC        | ≤4                            | Necrotizing pancreatitis | Intra- and/or extra-pancreatic | Inhomogeneous*, nonliquefied components <sup>†</sup> , no wall                  |
| Pseudocyst | >4                            | IEP                      | Extrapancreatic <sup>‡</sup>   | Homogeneous, fluid filled, circumscribed, encapsulated with wall                |
| WON        | >4                            | Necrotizing pancreatitis | Intra- and/or extra-pancreatic | Inhomogeneous, nonliquefied components, encapsulated with wall                  |

Sources.—References 2–4.  
 Note.—Any collection may become infected. ANC = acute necrotic collection, APFC = acute peripancreatic fluid collection, IEP = interstitial necrotizing pancreatitis, WON = walled-off necrosis.  
 \*Early ANCs may be homogeneous; follow-up computed tomography (CT) performed in 2nd week may help clarify status.  
 †Includes solid-appearing components or fat globules within fluid.  
 ‡Rarely, persistent pancreatic leak or disconnected duct may lead to intrapancreatic pseudocyst.

Courtesy for table:

Foster BR, Jensen KK, Bakis G, Shaaban AM, Coakley FV. Revised Atlanta classification for acute pancreatitis: a pictorial essay. *Radiographics*. 2016 May;36(3):675-87.

If an acute peripancreatic fluid collection persists beyond four weeks, it undergoes organization, forming a capsule that presents as an enhancing wall on contrast-enhanced CT scans. At this juncture, the collection is termed a pseudocyst. Importantly, devoid of necrosis, the pseudocyst should solely contain fluid without any non-liquefied components.<sup>(5)</sup>

**Role Of Imaging In Diagnosis:**

Imaging is crucial for confirming pancreatitis diagnosis and assessing complications such as fluid collections and pseudocysts. According to the 2012 Atlanta guidelines, an initial CT examination is recommended for patients with uncertain diagnosis, severe clinical symptoms, high scores on Ranson or APACHE scales, lack of rapid improvement with conservative therapy, or acute changes during initial medical treatment indicating potential complications.<sup>(6)</sup> Radiological imaging modalities play a crucial role in the comprehensive management of pancreatitis and pseudocysts. They include, Computed Tomography (CT): Essential for confirming pancreatitis diagnosis, assessing severity, and detecting complications such as peripancreatic fluid collections and pseudocysts. Magnetic Resonance Imaging (MRI): Offers detailed imaging, aiding in the characterization and localization of pancreatic pathology, as well as the assessment of pseudocysts. Ultrasound: Provides real-time imaging, aiding in the initial diagnosis of pancreatitis and monitoring the evolution of pseudocysts. Doppler ultrasound can assess vascularity within lesions. Endoscopic Retrograde Cholangiopancreatography (ERCP): Useful in visualizing pancreatic ducts and pseudocysts, allowing for both diagnostic and therapeutic interventions. Endoscopic Ultrasound (EUS): Offers high-resolution imaging, facilitating the identification and characterization of pancreatic lesions, including pseudocysts. Plain Radiography: May be utilized to assess complications such as intestinal obstruction or free air.<sup>(7)</sup> Like in this case it underscores the challenges in distinguishing between abdominal pathologies with overlapping clinical presentations.

The misdiagnosis of left pyonephrosis and the subsequent revelation of a renal pseudocyst underscore the necessity for advanced imaging techniques, such as contrast-enhanced CT, in navigating complex diagnostic scenarios. Contrast-enhanced CT emerged as the diagnostic cornerstone, unveiling the renal pseudocyst. The unexpected finding prompted a re-evaluation of clinical history and serological markers, leading to the accurate diagnosis of pancreatitis as the underlying cause.

**CONCLUSION:**

In the unfolding narrative of this case, we find a gentle reminder of the intricate nature of medical diagnoses. The initial misstep in diagnosing left pyonephrosis, later corrected to a renal pseudocyst associated with pancreatitis, invites reflection on the ever-evolving landscape of clinical understanding. This case gently underscores the value of advanced imaging, particularly contrast-enhanced CT, in navigating the subtleties of diagnostic uncertainties. Beyond its individual significance, it encourages a thoughtful approach, acknowledging the inherent challenges in distinguishing between complex abdominal pathologies. In the broader context of medical practice, this case encourages a tempered appreciation for the delicate dance between clinical judgment and technological advancements. It quietly urges us to embrace a nuanced perspective, recognizing that each diagnostic puzzle is an opportunity for growth and refinement in our collective pursuit of precision in patient care.

**Ethical approval:** Obtained.

**Conflict of interest:** Nil.

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**REFERENCES:**

1. Foster BR, Jensen KK, Bakis G, Shaaban AM, Coakley FV. Revised Atlanta classification for acute pancreatitis: a pictorial essay. *Radiographics*. 2016 May;36(3):675-87.
2. Hiremath R, Kuttancheri T, Gurumurthy B, Kini DV, Poojary SR, Bannampalli SR. A new page in the literature of pancreatic pseudocyst: case report on perirenal pseudocyst presenting as large kidney. *Egyptian Journal of Radiology and Nuclear Medicine*. 2022 Nov 22;53(1):240.
3. Peery AF, Dellon ES, Lund J, Crockett SD, McGowan CE, Bulsiewicz WJ, Gangarosa LM, Thiny MT, Stizenberg K, Morgan DR, Ringel Y. Burden of gastrointestinal disease in the United States: 2012 update. *Gastroenterology*. 2012 Nov 1;143(5):1179-87.
4. Pitchumoni CS, Agarwal N. Pancreatic pseudocysts: when and how should drainage be performed?. *Gastroenterology Clinics of North America*. 1999 Sep 1;28(3):615-39.
5. Banks PA, Bollen TL, Dervenis C, Gooszen HG, Johnson CD, Sarr MG, Tsiotis GG, Vege SS. Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus. *Gut*. 2013 Jan 1;62(1):102-11.
6. Balthazar EJ, Freeny PC, vanSonnenberg E. Imaging and intervention in acute pancreatitis. *Radiology*. 1994 Nov;193(2):297-306.
7. Schreyer AG, Wessling J, Grenacher L. Current Practice vs. Guideline Based Imaging in Abdominal Radiology in the German Speaking Area: Results of an Online Survey. In *RöFo-Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren 2016* Jan 27 (pp. 268-279). © Georg Thieme Verlag KG.