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Head and tail pancreatic duct stones mimicking duplex staghorn renal calculi: A rare case

Adeodatus Yuda Handaya^{a,*}, Nurbudiono^b, Aditya Rifqi Fauzi^a, Joshua Andrew^a, Ahmad Shafa Hanif^a, Azriel Farrel Krisna Aditya^c^a Digestive Surgery Division, Department of Surgery, Faculty of Medicine, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta 55281, Indonesia^b Department of Urology, Faculty of Medicine, Universitas Gadjah Mada/Hardjolukito Hospital, Yogyakarta, Indonesia^c Faculty of Medicine, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta 55281, Indonesia

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ABSTRACT

INTRODUCTION: Pancreatolithiasis is an uncommon disease and the diagnosis of pancreatic duct stones is challenging. The radiological findings of pancreatic duct stones may mimic other diseases, such as renal stones.

CASE PRESENTATION: A 42-year-old male came with chief complaint of recurrent bilateral flank pain accompanied by fever which worsen 7 days before admission. The patient was diagnosed as gastritis and received analgesics in several hospitals. Ultrasonography and IVP examinations showed stones in both kidneys. CT-scan was not performed due to limitation in the hospital. Patient was diagnosed bilateral staghorn nephrolithiasis. The patient underwent bilateral bivalve nephrotomy for staghorn renal stone performed by urologist, but intraoperatively, no stones were found. The patient was then consulted intraoperatively to the digestive surgeon and get immediate median laparotomy. Intraoperatively, stones were palpated in the head and tail of the pancreas. The stones were evacuated. The symptoms were relieved, neither recurrence, nor pain, nor postoperative leakage was found. Patient was discharged uneventfully 4 days after the procedure and had no complaints in further follow-ups.

DISCUSSION: The symptoms of pancreatolithiasis may overlap with nephrolithiasis and gastritis. The presented case was unique because from the history taking, clinical symptoms, USG, and IVP findings supported the diagnosis of nephrolithiasis, but intraoperative findings reveal pancreatic duct stones.

CONCLUSION: For patient diagnosed with renal calculi based on sonography and IVP findings, differential diagnosis of pancreatic stone should be considered especially if no underlying cause is detected. In such circumstances relying on IVP and sonographic findings alone can be misleading.

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1. Introduction

Pancreatolithiasis is a condition where there are stones in the pancreatic duct (true stone) or pancreatic parenchyma (false stone) [1]. Pancreatic stones are sequelae of chronic pancreatitis and occur in 50% of patients. These stones usually aggravate or produce typical pancreatic pain, epigastric pain radiating to the left scapula and to the back, by obstructing the pancreatic duct and producing upstream ductal hypertension and leading to parenchymal hypertension [1,2].

* Corresponding author at: Digestive Surgery Division, Department of Surgery, Faculty of Medicine, Universitas Gadjah Mada/Dr. Sardjito Hospital, Jl. Kesehatan No. 1, Yogyakarta 55281, Indonesia.

E-mail addresses: yudahandaya@ugm.ac.id

(A. Yuda Handaya), nby_uro@yahoo.com (Nurbudiono), aditya96.mail@gmail.com (A.R. Fauzi), joshua.andrew.kristianto@gmail.com (J. Andrew), ash29078@gmail.com (A.S. Hanif), azrielfarrel15@mail.ugm.ac.id (A.F.K. Aditya).

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The diagnosis of pancreatic duct stones is challenging. To date there are no specific laboratory tests [3]. Radiological examinations that can be helpful such as ultrasonography, besides being widely available, cheap, and noninvasive, can be used as a first-line diagnostic approach to pancreatolithiasis, but their sensitivity is low [4,5]. In addition, nephrolithiasis is a common urinary tract disease. Previous studies estimate the prevalence of renal stones in the United States is 7.1% in women and 10.6% in men [6,7].

In this paper, we report a 42-year-old male with recurrent bilateral flank pain that had been treated for gastritis and bilateral nephrolithiasis before being diagnosed with head and tail pancreatic duct stones with staghorn renal calculi appearance. This kind of case was rare and had not been reported to date. We aim to increasing the awareness of pancreatic duct stones as differential diagnosis in the findings of renal stones in ultrasonography and IVP examination due to the superimposed topography of pancreatic head and tail with kidney. This study was reported in line with the SCARE checklist [8].

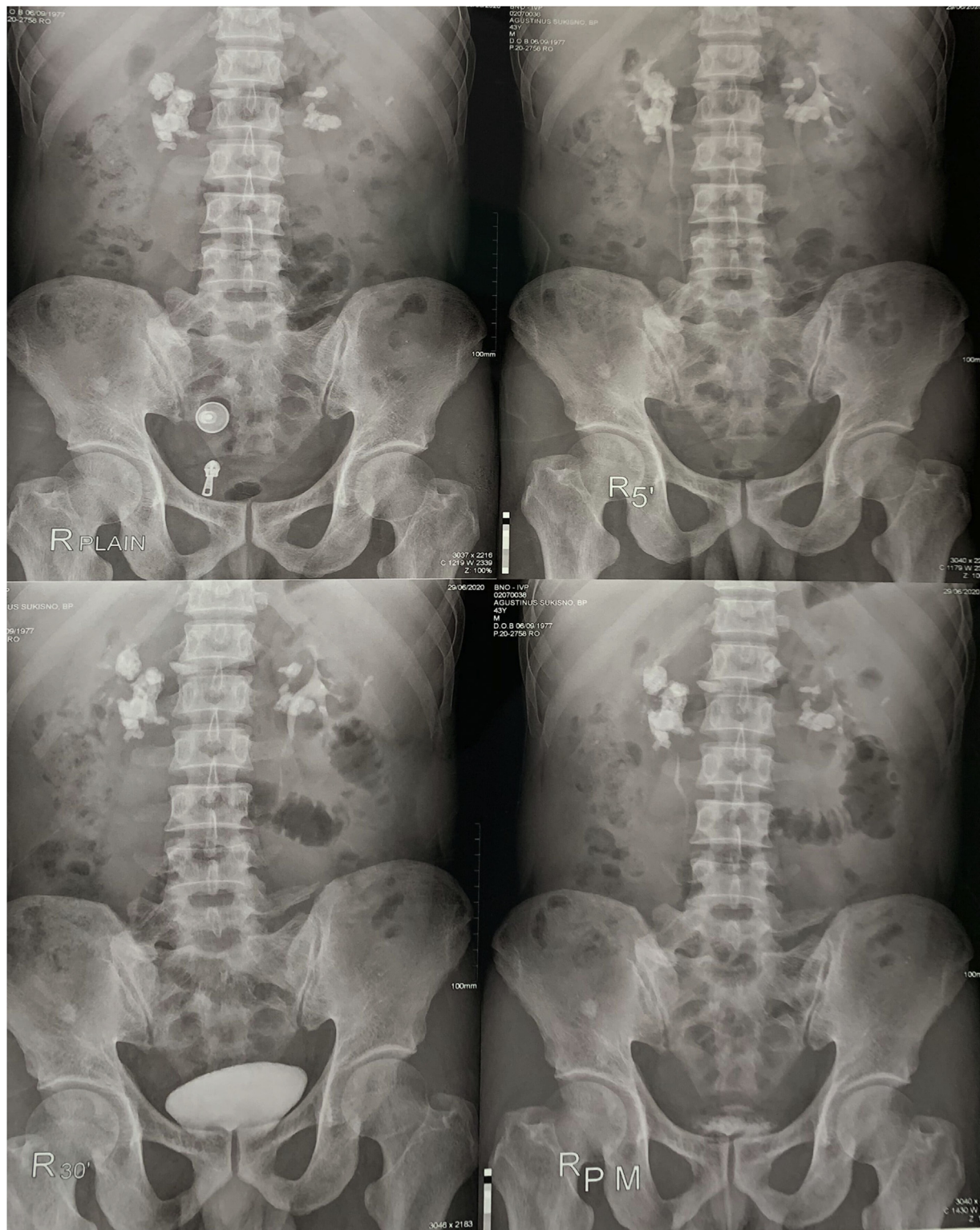


Fig. 1. IVP showed homogeneous staghorn-like opacity on the right and left renal projections.

2. Presentation of case

A 42-year-old male patient came to the emergency department referred by Primary Health Care using ambulance with the main complaint of bilateral flank pain accompanied by fever since 7 days before admission. The patient had similar complaints previously and diagnosed as gastritis and suspected nephrolithiasis, was given

analgesic injection, and discharged for further evaluation at outpatient clinic. The patient routinely consumed Omeprazole once daily and Ketorolac when the pain occurred since. The patient had no history of chronic disease and no family history of similar disease.

Ultrasonography examination of the right and left kidney was performed, an acoustic shadow picture of the kidneys was seen and concluded as duplex calcium plaque in renal (Fig. 2). Intra-

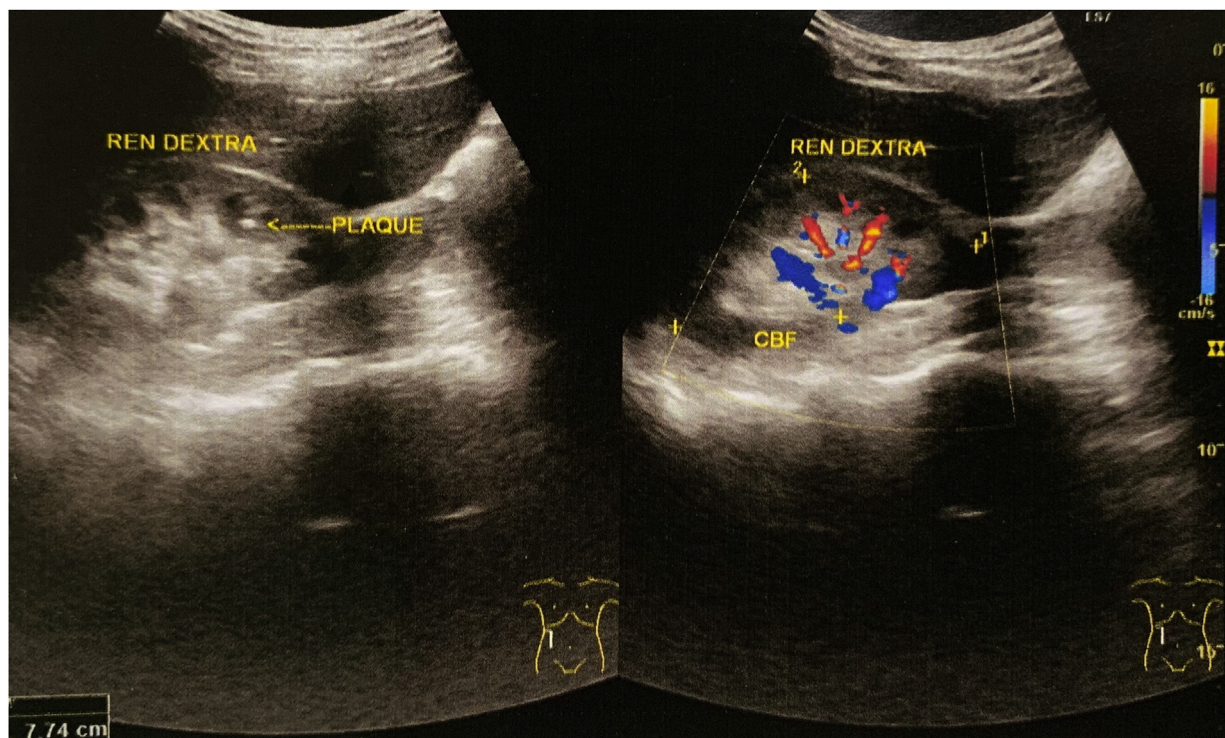


Fig. 2. USG of the right and left kidney showed duplex calcium plaque in renal.

venous pyelography (IVP) examination was performed, the results showed homogeneous staghorn-like opacity on the right and left renal projections (Fig. 1). Abdominal computed tomography (CT) scan was not performed due to the hospital limitation. Laboratory tests showed no significant results. Leucocyte count was $8960/\text{mm}^3$ with increased segmented neutrophil of 91.5%, BUN was 18 mg/dl, and serum creatinine was 0.99 mg/dl. The patient was diagnosed bilateral staghorn nephrolithiasis by senior urologist with 15 years of experience.

The patient was planned to undergo a bilateral bivalve nephrotomy for staghorn renal stone with lumbotomy incision. However, no renal stones were found in the right kidney and the urologist found intraperitoneal serohemorrhagic fluid. The patient was consulted to digestive surgeon intraoperatively and the surgery was converted to laparotomy with family consent. Median laparotomy was done to explore abdominal structure. Edema and pancreatic necrosis were found in head and tail of the pancreas. The pancreas was palpated and there were stones inside the head and tail of the pancreas. The stones then evacuated from the pancreatic duct (Fig. 3), debridement was done to the pancreas, and the pancreatic duct was sutured with absorbable material (Vicryl 2-0). In addition, peripancreatic drain was installed.

The patient was treated 4 days after the surgery before being discharged from the hospital uneventfully. One week, two weeks, three months, and six months follow ups showed no complaints, no recurrent abdominal pain, and no surgical wound infection. The patient showed no sign of developing chronic pancreatitis despite being educated about the possibilities of recurrence pancreatic stones and pancreatitis.

3. Discussion

Majority of the pancreatic duct stone cases are symptomatic due to the increased ductal pressure leading to parenchymal hypertension [1,2]. The symptoms of pancreatolithiasis may overlap with nephrolithiasis and gastritis, pain can start in the flank area [9,10].

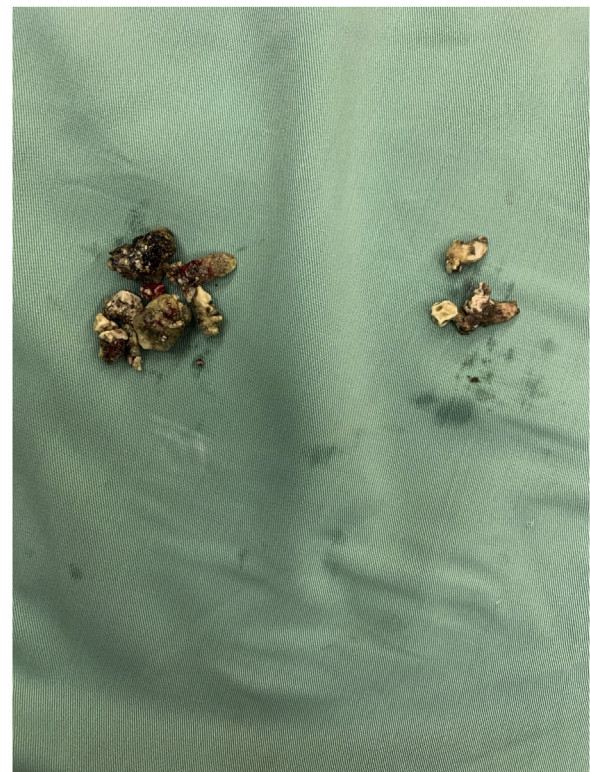


Fig. 3. Evacuated the pancreatic stones.

This is probably due to the fact that these organs have adjacent dermatomes (pancreas: T10, renal pelvis and ureter: T11-12, gastric: T8-12, respectively) so that visceral pain is felt in the same region [11–13]. Our case was unique that the patient had recurrent flank pain which suspected because of bilateral staghorn renal

stone and had been treated for gastritis suspected cause by routine use of analgetic in several hospitals. The patient ended being misdiagnosed as bilateral staghorn nephrolithiasis and underwent nephrotomy, before being diagnosed intraoperatively and treated for pancreatic duct stones. This case illustrates the difficulty in the diagnosis of pancreatolithiasis showing staghorn-like appearance if located in the head and tail of the pancreas, which its imaging represents bilateral staghorn calculi and present with similar symptoms of nephrolithiasis with infection and pancreatitis. To the best of our knowledge, no similar has been reported before.

Radiological investigation can be performed to confirm the diagnosis of pancreatolithiasis. Endoscopic ultrasonography (EUS), MSCT (multi slice CT-Scan) and magnetic resonance cholangiopancreatography (MRCP) have the highest levels of sensitivity [1]. However, in our case, intravenous pyelography and abdominal ultrasonography were inconclusive and caused mentioned misdiagnosis. Recurrent flank pain with opacity on IVP and acoustic shadow on USG in this case are suggestive of bilateral nephrolithiasis (Figs. 1 and 2). This phenomenon might be caused by superimposed images of the stones in front of the renal collecting system. MSCT should be performed but limitation of hospital resources hindered this process.

4. Conclusion

The diagnosis of nephrolithiasis must be confirmed by EUS, MSCT, or MRCP. Pancreatolithiasis should be differential diagnosis of renal stones findings by IVP or ultrasonography examination especially if no underlying cause is detected. Relying only on ultrasonography and IVP examination in diagnosing nephrolithiasis may be misleading.

Declaration of Competing Interest

The authors report no declarations of interest.

Sources of funding

The authors declare that this study had no funding resource.

Ethical approval

The informed consent form was declared that patient data or samples will be used for educational or research purposes. Our institutional review board also do not provide an ethical approval in the form of case report.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Adeodatus Yuda Handaya and Nurbudiono conceived the study. Aditya Rifqi Fauzi drafted the manuscript. Ahmad Shafa Hanif,

Joshua Andrew, and Azriel Farrel Krisna Aditya critically revised the manuscript for important intellectual content. All authors facilitated all project-related tasks.

Registration of research studies

The manuscript is a case report, not considered a formal research involving participants.

Guarantor

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Provenance and peer review

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