



Case report

Spinal surgery for gallstones disease – Case report of a rare differential diagnosis

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ABSTRACT

Introduction and importance: Abdominal pain in the right upper quadrant is very common for patients to present in the emergency department. Finding the correct diagnosis seems straightforward in most cases but can be challenging.**Case presentation:** We present the case of a 75-year-old male with a rare differential diagnosis for right upper quadrant and back pain, initially diagnosed as symptomatic cholelithiasis. After referral to an abdominal surgeon, detailed history taking prior to planned cholecystectomy revealed a record of back pain due to spinal degeneration and fusion surgery, as well as a bulge of the right abdominal wall with hypesthesia in a dermatomal area in the right upper quadrant. Considering these “new” facts, a spinal surgeon was consulted and a foraminal disc hernia of the thoracic vertebrae 11/12 was identified as the cause of symptoms. Instead of the initially planned cholecystectomy, a right-sided facetectomy Th11/12, sequestrectomy and unilateral transpedicular stabilization to decompress the nerve root was successfully performed.**Clinical discussion:** Although, symptomatic cholelithiasis is one of the most common diagnoses for patients presenting with right upper quadrant pain in the presence of gallstones, other differential diagnoses have to be considered. Thoracic disc herniations can present with atypical symptoms that mimic other non-spinal causes and may pose a diagnostic challenge, sometimes even leading to unnecessary surgery.**Conclusion:** This case highlights a rare differential diagnosis for one of the most common diseases seen by emergency physicians. It emphasizes the risk of working under time pressure, especially in an emergency setting, which may lead to premature diagnostic error and treatment, endangering patient's care and safety.

1. Introduction and importance

Abdominal pain in the right upper quadrant (RUQ) is common for patients to present in the emergency department (ED). Many patients seen by a general surgeon suffer from symptomatic gallstone disease or its complications like cholecystitis or pancreatitis [1]. Other differential diagnoses of cholecystolithiasis can be portal vein thrombosis, hepatitis, carcinoma of the upper GI tract or diseases of the small intestine, renal or urinary tract. However, occasionally unusual and nonabdominal causes for this pain can be found, including pulmonary, cardiac or musculoskeletal diseases [2,3]. Finding the correct diagnosis seems straightforward in most cases, but can be challenging. It needs a comprehensive present and past medical history, physical examination, and the appropriate/accurate radiological examination [4]. In the emergency

setting, diagnostic errors happen frequently, and their consequences vary widely from no effect to unnecessary procedures and patient harm.

Thoracic disc herniations are rare and account for <1% of disc herniations [5,6]. Although they mainly cause signs of myelopathy (>50%) [7], they may present mimicking symptoms of other non-spinal causes [6] like, for example, gallstone disease or one of its complications. Our case report took place at a university hospital and was written according to the SCARE Guidelines [8].

2. Case presentation

A 75-year-old male patient walked in with RUQ pain and back pain to the ED. The constant, sharp pain started a few days before, without a triggering event or association with food intake, and it worsened over

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Fig. 1. Patient presentation: Bulging of the abdominal wall of the patients right upper quadrant.

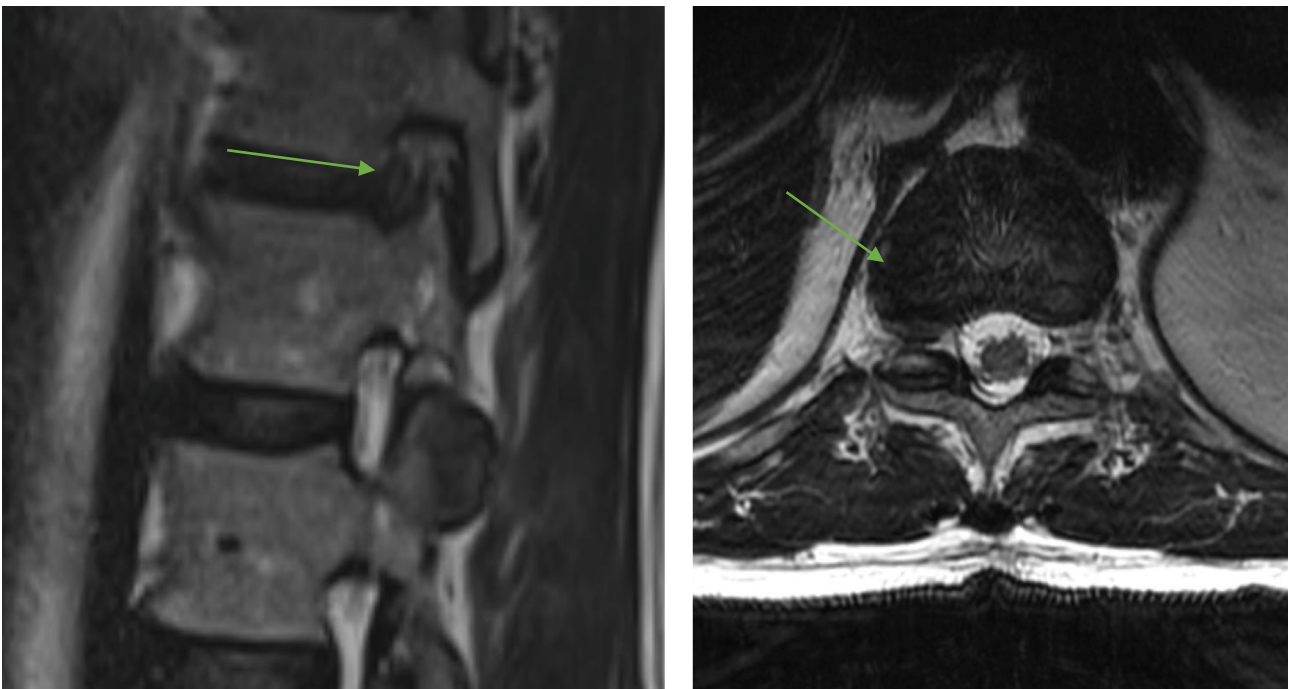


Fig. 2. Thoracolumbar MRI: Left sagittal view on the foramen Th 11 right (green arrow) and right axial view of the Th11/12 foramina with foraminal disc herniation (orange arrow). (T11, T12 = thoracic vertebra 11 and 12, R = right, L = left).



Fig. 3. Patient presentation after the operation: Bulging of the abdominal wall improved.

time. The patient did not complain about nausea, vomiting, fever, jaundice, rash, or itching. In the past, he was diagnosed with degenerative spine disease and underwent several infiltrations and fusion surgeries of the lumbar spine. The physical examination showed mild tenderness in the RUQ and a negative Murphy's sign. Blood samples showed normal results with no signs of inflammation or cholestasis. An additional magnetic resonance cholangiopancreatography (MRC) was performed which confirmed the cholecystolithiasis and some side branch IPMN's (intraductal papillary mucinous neoplasms) of the pancreas. Considering the information gathered up to this point, the initial working hypothesis of the emergency physician was symptomatic cholecystolithiasis.

The subsequent ultrasound confirmed a cholecystolithiasis, and the patient was referred to an abdominal surgeon to plan the laparoscopic cholecystectomy. In the meantime, he was treated with painkillers (scopolamine butylbromide and ibuprofen). The abdominal surgeon found inconsistencies in the patient's history and symptoms, such as constant pain as opposed to the typical colic-like pain character found in symptomatic cholelithiasis. Furthermore, bulging of the lateral abdominal wall with hypesthesia of the skin and pain along the lower right-sided ribs were detected (Fig. 1). Considering the patient's history and the symptoms suggestive of a radiculopathy, a spine surgeon was involved. A radicular symptom of the lower thoracic spine was suspected due to a nerve root compression. This was confirmed by magnetic resonance imaging (MRI) of the thoracic spine, showing a foraminal disc herniation of the disc T11/12 with obliteration of the right neuroforamen Th11 (Fig. 2). The imaging and clinical presentation were conclusive, and therefore an electromyography study (EMG) to confirm nerve root pathology of Th11 was not conducted.

A conservative treatment plan with non-steroidal anti-inflammatory

drugs, opioids and physiotherapy was set up with CT-guided right-sided Th11 foraminal nerve root infiltration using dexamethasone and local anesthesia. After the infiltration, the patient was pain-free for three days before he deteriorated again with severe radicular pain. He was then offered surgery to decompress the nerve root, performed by a right-sided facetectomy Th11/12, sequestrectomy and unilateral transpedicular stabilization.

The treatment went without complication. The patient recovered well, was pain-free and did not show any neural irritation while the abdominal bulging improved (Fig. 3). No gallstone-related symptoms occurred during the follow-up period of one year.

3. Clinical discussion

In our case, the pain in the RUQ was radiating from the back to the front, confined to the right side and limited to a belt-like area, corresponding to the dermatome Th11. The bulging of the right upper abdominal wall with radicular symptoms was another clinical feature that is not typical for cholelithiasis and should lead the physician to consider a neurological or abdominal wall pathology. The early detection of thoracic disc herniations can avoid unnecessary examinations and treatments as well as surgeries. Long-term complications such as neurological deterioration with weakness of the abdominal wall or the lower extremities may also occur when the diagnosis is delayed. The diagnosis of disc herniations is established via MRI of the spine. Periradicular CT-guided infiltrations with local anesthetics and corticosteroids can confirm a diagnosis when foraminal disc herniation is present, and the patient is suffering predominantly from radicular pain. A long-lasting therapeutic effect was not seen in our case, and decompressive surgery was performed [9].

4. Conclusion

To exclude other neurologic conditions mimicking a nerve root compression-like thoracic diabetic neuropathy or segmental zoster eruption, needle electromyography (EMG) may also be helpful. Malig-nancies may be ruled out by contrast-enhanced CT scan [10].

Exclusion of differential diagnosis is of paramount importance when the patients' presentation and the conducted imaging are ambiguous. An early holistic, interdisciplinary patient evaluation can optimize resource usage and improve patient outcomes.

Provenance and peer review

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Consent

Written informed consent was obtained from the patient for publi-cation of this case report and accompanying images. A copy of the written consent is available for review by the Corresponding author J.M. Klasen.

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CRediT authorship contribution statement

KL: writing the paper, literature search, revision

JMK: correcting and writing the paper, literature search, approval of final manuscript

LF: correcting and writing the paper, approval of final manuscript

SS: Adding pictures and writing the paper.

Declaration of competing interest

No conflicts of interest, the authors have no financial, consultative, institutional, or other relationships that might lead to bias.

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