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HETEROTOPIC SPLENIC TISSUE MIMICKING METASTASES ON MAGNETIC RESONANCE IMAGING

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ABSTRACT

Background: Heterotopic splenic tissue can occur following splenectomy and is typically asymptomatic, often discovered incidentally during imaging for other conditions. This benign condition may mimic malignant processes, posing diagnostic challenges especially in patients with a history of cancer or concurrent malignancy.

Case description: We report the case of a 60-year-old male with a history of well-controlled hypertension and a splenectomy following a traumatic injury at age 7. The patient underwent routine screening which revealed elevated prostate-specific antigen (PSA) levels. Subsequent magnetic resonance imaging (MRI) identified suspicious lesions in the prostate and a left lower quadrant mass. Prostate biopsy confirmed an adenocarcinoma with a Gleason score of 6, while biopsy of the abdominal mass revealed heterotopic splenic tissue. The management strategy included active surveillance for prostate cancer, considering the tumour's low aggressiveness and the benign nature of the splenic tissue.

Conclusions: This case highlights the importance of considering heterotopic splenic tissue in differential diagnosis when evaluating abdominal masses in patients with a history of splenectomy. Accurate diagnosis through careful imaging and biopsy is crucial to avoid misdiagnosis and unnecessary treatments, particularly in patients with concurrent malignancies.

KEYWORDS

Splenosis, heterotopic spleen, prostate, cancer, adenocarcinoma

LEARNING POINTS

- In patients who have had a prior splenectomy for trauma, heterotopic splenic tissue may be mistaken for metastases on MRI.

INTRODUCTION

Heterotopic splenic tissue, commonly referred to as splenosis, typically arises following splenic trauma or surgery that disrupts the splenic capsule, leading to ectopic auto transplantation of splenic tissues[1]. While often asymptomatic and clinically silent, its detection can pose a diagnostic challenge, particularly when discovered incidentally during investigations for unrelated conditions. Prostate cancer, on the other hand, is one of the most common cancers among men, with the prostate-specific

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antigen (PSA) test being a routine screening tool that can prompt further diagnostic workup including magnetic resonance imaging (MRI) and biopsy[2].

This report describes a 60-year-old male with a history of hypertension and splenectomy, who presented with an elevated PSA level during routine screening. Subsequent imaging and biopsies not only confirmed the presence of prostate adenocarcinoma, but also unexpectedly revealed heterotopic splenic tissue. The co-occurrence of these two distinct pathological findings in this patient highlights the importance of a comprehensive diagnostic approach and raises interesting considerations regarding the management of similar cases. This report highlights the diagnostic challenges and clinical decisions faced when encountering coincidental pathologies, particularly in the context of cancer screening and diagnosis.

CASE DESCRIPTION

The patient is a 60-year-old male with a medical history significant for well-controlled hypertension. He had undergone a splenectomy at the age of 7 due to a traumatic injury. His family history was notable for prostate cancer in his brother. He presented for routine health screening without any specific complaints. A routine screening revealed an elevated PSA level of 5.9 ng/ml. Given the patient's family history and elevated PSA, further diagnostic workup was initiated. MRI of the pelvic region was performed, which revealed two prostate imaging-reporting and data system) (PI-RADS) 4 lesions in the transition and peripheral zones of the prostate, along with a left lower quadrant soft tissue mass measuring about 4.3 cm in transverse dimension, concerning for metastatic disease *(Fig. 1)*.

The patient underwent MRI fusion-guided biopsy of the prostate, which confirmed the presence of prostate adenocarcinoma with a Gleason score of 6 (3+3), indicating a moderately differentiated adenocarcinoma. Additionally, to characterise the left lower quadrant mass, a computed tomography (CT) guided needle biopsy of the mass was performed. Surprisingly, the histological examination of the mass did not show malignant cells but instead revealed multiple cores of splenic tissue with red pulp, lymphoid aggregate and sclerosed vessel supporting the diagnosis of heterotopic splenic tissue *(Fig. 2)*.

Following the diagnosis, the patient was referred to a urologist for further management of prostate adenocarcinoma. The decision was made to monitor the prostate cancer with active surveillance considering the Gleason score, the patient's age and risk stratification per National Comprehensive Cancer Network guidelines[2]. The heterotopic splenic tissue was deemed benign and non-functional, requiring no immediate intervention but periodic monitoring to rule out any potential complications.

DISCUSSION

This case exemplifies the diagnostic complexities and clinical challenges of managing concurrent heterotopic splenic tissue and an abdomino-pelvic malignancy. Recognised in medical literature for its various clinical implications, heterotopic splenic tissue notably complicates the differential diagnosis of abdominal and pelvic masses. Although benign, ectopic splenic implants can mimic malignant tumours, especially in patients with a cancer history, potentially leading to misdiagnoses and unnecessary invasive procedures.

The incidence of heterotopic splenic tissue is poorly defined, largely because it is often asymptomatic and discovered incidentally during imaging for other conditions[3]. It typically follows traumatic splenic rupture or surgical splenectomy, resulting in splenic cells seeding in the peritoneal cavity. These cells can vascularise and function as normal splenic tissue, with common implantation sites including the left upper quadrant; however, implantation can occur at other sites as well[4]. While generally asymptomatic, heterotopic splenic tissue must be differentiated from pathological conditions. Misdiagnosing heterotopic splenic tissue as metastatic disease could lead to aggressive, unnecessary treatments or surgeries[3]. Understanding the benign nature of these implants allows for more conservative management, reducing potential morbidity from misdiagnosis. Although

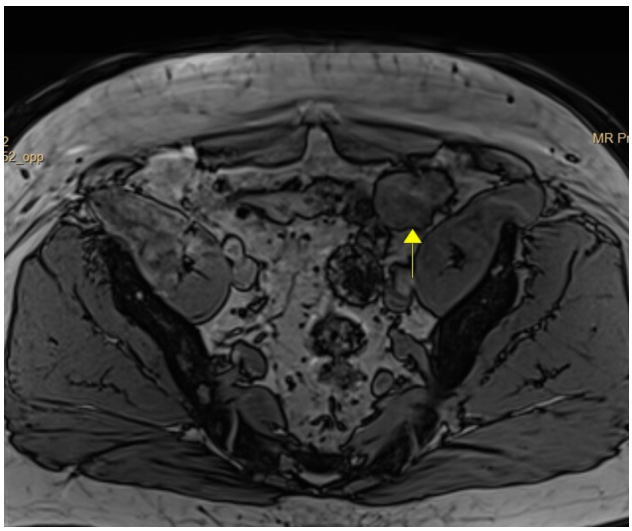

Figure 1. MRI of the abdomen/pelvis showing soft tissue mass in the left lower quadrant, which appears to be separate from the adjacent bowel (yellow arrow).

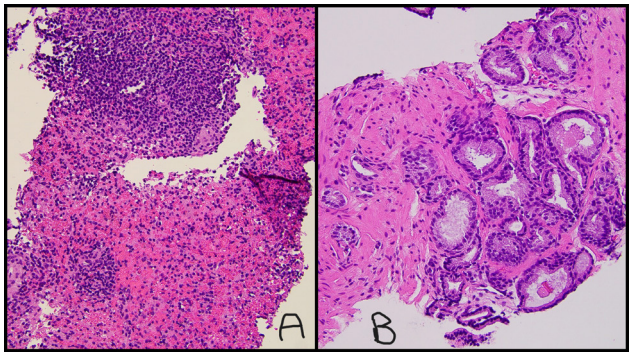

Figure 2. A – Histopathology of left lower quadrant mass showing splenic tissue. H&E staining ×200. B – Histopathology of prostate biopsy showing moderately differentiated prostate adenocarcinoma. H&E staining ×200.

usually without significant clinical consequences, complications such as haemorrhage or visceral compression can occur in rare instances.

Diagnostic imaging, such as CT and MRI, can identify suspicious masses but lacks specificity in differentiating splenic tissue from neoplastic processes[5,6]. Advanced techniques such as scintigraphy using heat-damaged red blood cells labelled with technetium-99m have demonstrated high specificity and sensitivity in identifying splenic tissue[7]. In this case, the initial discovery of a left lower quadrant mass raised concerns about possible metastatic prostate cancer – a common scenario, given the patient's elevated PSA levels and the detection of prostate lesions.

The diagnostic strategy employed was prudent, initially involving MRI and targeted biopsy, crucial for distinguishing between benign and malignant lesions[1]. The biopsy confirmed the presence of heterotopic splenic tissue, preventing a misdiagnosis of metastatic disease and averting unnecessary treatment.

Additionally, the management of prostate adenocarcinoma in this patient was notable. Given the Gleason score of 6, indicating a less aggressive tumour, and the patient's age, a conservative approach of active surveillance was chosen. This aligns with current guidelines recommending active surveillance for selected cases of low-risk prostate cancer to avoid the side effects of more aggressive treatments while carefully monitoring disease progression[8,9].

The coexistence of heterotopic splenic tissue in this patient underscores the importance of a thorough evaluation and a multidisciplinary approach in managing patients with complex presentations. It also highlights the role of pathologists in providing a definitive diagnosis through histological examination, guiding the clinical team in accurate disease characterisation and appropriate management planning.

CONCLUSION

This report describes a unique instance of heterotopic splenic tissue coinciding with prostate adenocarcinoma in a 60-year-old patient with a history of splenectomy. The discovery of heterotopic splenic tissue during the investigation of elevated PSA and suspicious prostate lesions underscores the diagnostic challenges and the importance of differential diagnosis in clinical practice.

The presence of heterotopic splenic tissue, while benign, initially raised concerns for metastatic disease, illustrating how such benign conditions can mimic more serious pathological processes. The accurate diagnosis, facilitated by targeted imaging and biopsy, avoided the potential for unnecessary aggressive treatment and highlighted the importance of a meticulous and informed diagnostic approach.

Furthermore, this case contributes to the broader medical knowledge by emphasising the need for awareness of heterotopic splenic tissue in patients with a history of splenectomy presenting with unexplained masses. It also showcases the role of conservative management in prostate cancer with a lower Gleason score, where active surveillance can safely be employed.

Clinicians should consider heterotopic splenic tissue in the differential diagnosis of abdominal or pelvic masses in post-splenectomy patients to ensure appropriate and tailored patient care. This case reinforces the value of interdisciplinary collaboration and the judicious use of diagnostic resources in the management of complex clinical scenarios. Through such comprehensive evaluations, it is possible to achieve optimal outcomes, minimising patient morbidity and improving the quality of care delivered.

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