CASE REPORT

Abdominal pain as initial presentation of lung cancer

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SUMMARY

Isolated spleen metastasis (ISM) in general is very rare with a reported incidence of 2.3–7.1% for all solid cancers. Lung cancers rarely metastasise to the spleen. It is very atypical for ISM to be the initial presentation of lung cancer as well. In our case, a 55-year-old woman presented with a 3-week history of left-sided abdominal fullness and dull pain. Workup was remarkable for splenic mass that turns out to be adenocarcinoma with unknown primary tumour. Biopsy of the mass with immunohistochemistry and whole body position emission tomography scan was able to identify lung cancer as the primary tumour. The patient underwent splenectomy, wedge resection of the lung mass along with short-course of chemotherapy. She never had any recurrences since then.

BACKGROUND

Isolated spleen metastasis (ISM) in general is very rare with reported incidence rate of 2.3–7.1% for all solid cancers. ISM secondary to lung cancer is rare and most lesions are asymptomatic and are discovered accidentally. Given these facts, the patient we present had abdominal pain and discomfort as initial presentation for lung cancer.

CASE PRESENTATION

A 55-year-old woman presented with a 3-week history of left abdominal dull pain and fullness sensation. She denied of any abdominal trauma, nausea, vomiting, haematemesis, chest pain, haemoptysis, weight loss, recent sick contacts or travel. Review of systems was significant for 30-pack-year history of tobacco use. Physical examination revealed mild fullness in the left upper quadrant area with mild tenderness.

INVESTIGATIONS

Complete blood count and complete metabolic profile were unremarkable. Liver and coagulation panels were normal as well. Ultrasound of the abdomen was negative and unable to explain the clinical presentation. Subsequently, the patient underwent CT of the abdomen which showed a 2.6 cm mass in the medial aspect of the spleen suspicious for malignancy (figure 1). Therefore, CT-guided biopsy of the lesion was performed and was compatible with adenocarcinoma (figure 2A). Immunohistochemistry staining was strongly positive for cytokeratin 7 (CK7) and thyroid transcription factor-1 (TTF-1; figure 2B), focally weakly positive for CK20 (figure 2C) and negative for CDX-2 (figure 2D) confirming the lung as the

Figure 1 CT of the abdomen showing 3.2×2.6 cm mass in the medial aspect of the spleen.

primary source. To further delineate the primary cancer, position emission tomography (PET) scan revealed a 2.5 cm mass in the right upper lobe of the lung (figure 3A) in addition to the spleen mass (figure 3B) aforementioned. Based on the above, tumour, node and metastasis classification for staging of non-small cell lung cancer in this patient was T1bN1M1b.

TREATMENT, OUTCOME AND FOLLOW-UP

Owing to the marginal function of the lung, a wedge resection of the lung mass instead of upper lobectomy was performed and was positive for adenocarcinoma, which was consistent with the spleen biopsy. Findings and treatment options were discussed with the patient who opted to proceed with laparoscopic splenectomy and to start platinum-based chemotherapy. Postoperatively, abdominal symptoms improved. Six months follow-up with repeated PET scan revealed no recurrence or new lesion.

DISCUSSION

Spleen metastases from internal organ malignancies are rarely observed; with a reported incidence rate of 2.3–7.1% for all solid cancers.¹ Melanoma has the highest risk of metastasising to the spleen with a risk of 30%, whereas only 5.6% of lung cancers spread to the spleen.^{2–3} The presence of splenic capsule, continuous blood flow, rhythmic contractility, sharp turns of the splenic artery, high number of immune cells and high levels of angiogenesis inhibitor factors make it difficult for tumour emboli to reach the spleen.² Splenic metastasis usually originate from the left lung more than the right, probably due to blood supply and proximity of the left lung.³ Adenocarcinoma is the most frequent cell type, which accords with its propensity for earlier haematogenous dissemination.⁴ Sixty per

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Figure 2 (A) Spleen biopsy histopathology: infiltration of spleen by metastatic lung adenocarcinoma. (B) Immunohistochemical stains revealing the tumour cells diffusely and strongly positive for thyroid transcription factor-1 and cytokeratin 7 (CK7), focally weakly positive for CK20 (C) and negative for CDX-2 (D).

Figure 3 (A) Position emission tomography (PET) scan revealing hypermetabolic nodule (2.3×1.2 cm) in the right upper lobe with central cavitation and speculation that abut the pleural surface. (B) PET scan revealing hypermetabolic mass (3.2×2.6 cm) in the medial aspect of the spleen.

cent of ISM are asymptomatic and are discovered incidentally.² ISM can present with fever, weight loss, abdominal pain, fatigue, splenomegaly, splenic rupture or hypersplenism, which manifests as anaemia or thrombocytopenia.⁴ The time interval between detection of the primary lung tumour and the ISM varies and ranges from 1 month to 8 years.⁴ PET/CT scans have a sensitivity of 95% and specificity of 83% in detecting metastasis and tracking the primary tumour site. However, CT scan is considered standard of care and should be performed first before PET scan. The use of PET scan is usually carried out pre-operatively in most cases. In addition, immunohistochemistry can be helpful. Positive TTF-1 and CK7 with negative or weakly positive CK20 indicate primary lung cancer with a 95% CI. ISM should be differentiated from other benign and malignant lesions such as lymphomas, malignant haemangiomas and lymphangiomas.²⁻⁴ Given the rarity of the disease, there are no guidelines for the management of ISM. The National Comprehensive Cancer Network (NCCN) guidelines for the management of non-small cell lung cancer in 2009 recommends surgical resection of isolated metastasis to the brain or the adrenals if the primary tumour has been resected without any recurrence. Although splenic metastasis was not mentioned in the guidelines, most patients from the reported cases that underwent splenectomy had a higher survival rate. Standard platinum-based chemotherapy could prevent other metastases and improve survival.⁵ Although the prognosis of ISM is unknown, it represents an early blood metastasis to the spleen rather than advanced stage of the disease.

Learning points

- ▶ Proper and detailed workup of persistent abdominal pain is required to identify the underlying aetiology of the disease.
- ▶ Splenomegaly is always abnormal in adult patients and has to be worked up and treated promptly without any delay.
- ▶ Isolated spleen metastasis is a rare presentation for lung cancer. A careful analysis of family, occupational and social history can yield a better diagnosis of the underlying disease.

Competing interests None.

Patient consent Obtained.

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