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Pleural Schwannoma Suspected as Metastasis of Breast Cancer

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Corresponding Author: Woosung Lim, e-mail: limw@ewha.ac.kr**Conflict of interest:** None declared**Patient:** Female, 62-year-old
Final Diagnosis: Pleural schwannoma
Symptoms: Lt. breast mass
Medication: —
Clinical Procedure: —
Specialty: Surgery**Objective:** Challenging differential diagnosis**Background:** Differentiating a distant lesion in breast cancer patients can be challenging. Although pleural schwannoma in breast cancer patient is unusual, clinicians may encounter many similar benign lesions mimicking metastatic breast cancer.**Case Report:** Herein, we present the case of a 62-year-old female patient who developed schwannoma on her pleura, which was suspected as metastasis of breast cancer.**Conclusions:** Our case highlights the need to keep in mind the non-malignant diagnosis of distant lesion in those with malignancies, such as breast cancer.**MeSH Keywords:** Breast Neoplasms • Neoplasm Metastasis • Neurilemmoma**Full-text PDF:** <https://www.amjcaserep.com/abstract/index/idArt/921548>

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Background

Metastasis of breast cancer is usually considered on clinical, biological, and radiologic findings [1]. Differentiating a distant lesion in breast cancer patients may sometimes be challenging [2,3]. Though histopathological confirmation of metastasis is not routinely performed, a lesion suspected to be metastatic may occasionally be revealed to be benign instead of a metastatic carcinoma [1]. Schwannoma is a benign, well-circumscribed tumor of the peripheral nerve sheath, which is mostly solitary [4–6]. Pleural schwannoma is a very rare lesion which arises from the autonomic nerve sheaths in the pleura [4,6]. Here, we present a case of pleural schwannoma mimicking metastasis of breast cancer.

Case Report

A 62-year-old postmenopausal Asian female visited our institution with a left breast mass which was accidentally discovered on breast ultrasound. We performed a core biopsy for diagnosis, and the result was invasive ductal carcinoma. Routine laboratory investigations were within normal limits. Before surgery, during staging workup, a small enhancing lesion at the left pleura was discovered on breast magnetic resonance imaging (MRI), and chest computed tomography (CT) showed a 7-mm sub-pleural nodule in the left anterior chest wall, just below the left 2nd rib anterior arc (Figure 1). Radiological differential diagnoses were pleural or intercostal lymph node metastasis, benign pleural tumor (solitary fibrous tumor), and inflammatory or fibrotic nodule. On positron emission tomography (PET) imaging, focal mild metabolism was found just below the left 2nd rib anterior arc in the left anterior chest wall (Figure 2); therefore, the possibility of a metastatic lesion was considered.

The patient was scheduled for surgery and excision of the pleural mass via VATS (video-assisted thoracic surgery). RO excision of the pleural mass was performed for cure or complete remission. Grossly, the specimen showed a gray solid and membranous soft tissue mass with partially cystic, mucoid feature. Intraoperative frozen biopsy result of the pleural lesion revealed it as a benign lesion. Then, nipple sparing mastectomy with sentinel lymph node biopsy and immediate reconstruction with implant was performed for her left breast cancer treatment.

Pathologic examination of the pleural lesion showed an encapsulated tumor with fibrovascular capsule (Figure 3A). The characteristic Antoni A and Antoni B areas were seen. Whirling cells and Verocay bodies were also observed. Moreover, hypocellular areas containing siderophages with dilated vessels, cystic lesions with mucinous foci without capsular invasion, and thick, hyalinized wall were observed (Figure 3B).

Immunohistochemical (IHC) studies showed highly positive for S100 protein (Figure 3C). The diagnosis was schwannoma. The size of breast cancer was 0.8×0.8 cm and 0.2×0.2 cm; it was designated as stage Ia (T1aN0M0). IHC was positive for both estrogen receptor (ER) and progesterone receptor (PR), and 2+ for HER-2 expression (SISH negative, consistent with luminal A type).

The patient recovered well postoperatively with no adjuvant therapy for schwannoma. Postoperative investigations included a chest CT, which showed no residual tumor/lesion. On her 6-month follow-up examination, the patient was completely asymptomatic; all studies, including chest CT, showed no evidence of tumor recurrence.

Discussion

Metastatic breast cancer patients usually present with non-specific symptoms, such as weight loss, vague pain, or dyspnea [1]. For definitive histologic confirmation and assessment of tumor biology such as receptor status (ER, PR, and HER-2), tissue acquisition is essential [3,7]. However, in an actual clinical setting, certain radiological imaging findings without histopathological confirmation can be considered acceptable evidence for metastasis [8].

Schwannoma is a benign peripheral nerve sheath tumor which is usually solitary [9]. Schwannomas often arise on the nerve connecting the brain to inner ear. Usual locations include the extremities, neck, mediastinum, retroperitoneum, and posterior spinal roots. Pleural schwannomas are very rare tumors which arise from the autonomic nerve sheaths in the pleura [4,6]. They are usually benign, asymptomatic, and slow growing.

Schwannomas arising in the pleura of the lung usually grow slowly and show no symptom [4]. Most patients with pleural schwannomas are asymptomatic or may present with nonspecific symptoms. Therefore, most pleural schwannoma cases are incidental finding during investigations for other complaints. Our pleural schwannoma case was also found incidentally during staging workup for breast cancer. Histologic differential diagnosis includes spindle cell tumors such as neurofibroma, leiomyoma, leiomyosarcoma, and calcifying aponeurotic fibroma. Antoni A and B areas are found microscopically in most of pleural schwannoma cases. Antoni A shows areas of hypercellularity with Verocay bodies. Antoni B represents areas of myxoid hypocellularity exhibiting degenerating changes such as cystic formation, calcification, hemorrhage, xanthomatous infiltration, and hyalinization. In IHC studies, pleural schwannomas showed strongly positive for S100 protein, which is a marker for cells of neural crest cell origin [4,10].



Figure 1. A chest computed tomography showed a 7-mm subpleural nodule in the left anterior chest wall, just below the left 2nd rib anterior arc.

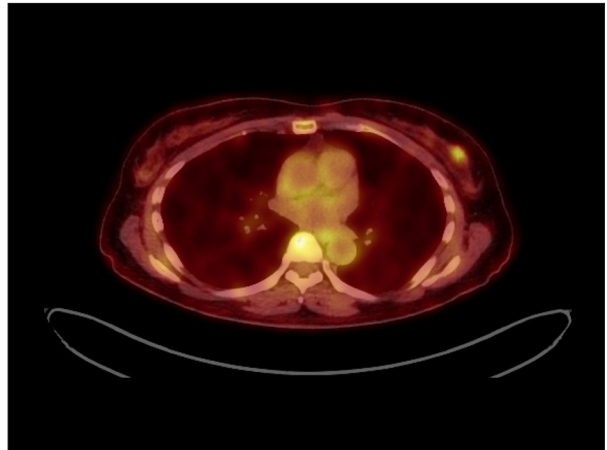


Figure 2. On positron-emission tomography imaging, focal mild metabolism in the left anterior chest wall was found just below the left 2nd rib anterior arc.

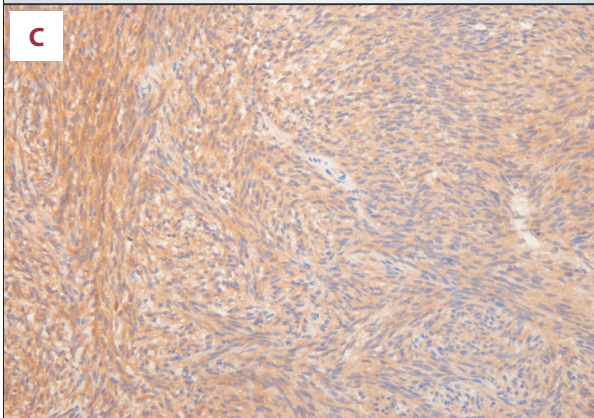
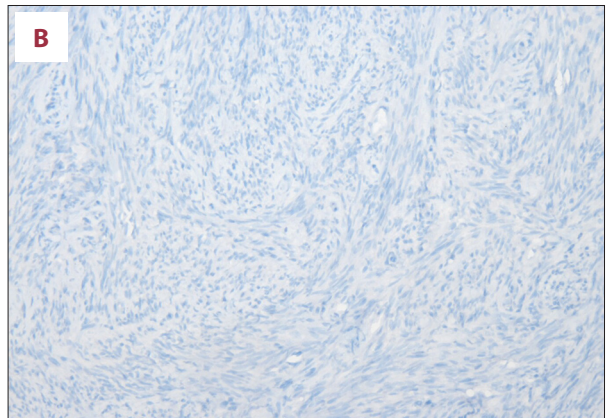
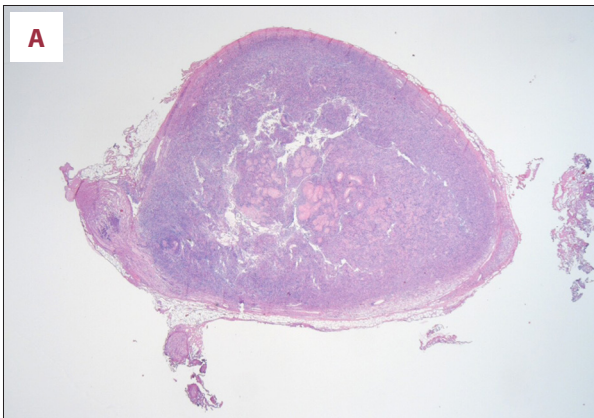


Figure 3. Pathologic examination of the pleural lesion showed a well encapsulated tumor with fibrovascular capsule. (A) Pathologic examination of the pleural lesion showed an encapsulated tumor with fibrovascular capsule. (B) The characteristic Antoni A and Antoni B areas were seen. Whirling cells and Verocay bodies were also observed. Moreover, hypocellular areas containing siderophages with dilated vessels, cystic lesions, and thick, hyalinized wall were observed. (C) Immunohistochemical studies showed highly positive for S100 protein.

Although pleural schwannoma is rare in breast cancer patients, clinicians may encounter many similar benign conditions mimicking metastatic breast cancer. Our case emphasizes the need to consider non-malignant diagnosis in patients with malignancy, such as breast cancer.

Conclusions

Differentiating a distant lesion in breast cancer patients can sometimes be challenging. Although histopathological confirmation is not routinely needed, a lesion suspected to be metastatic may occasionally be revealed to be benign instead of a metastatic carcinoma. Our case highlights the need to keep in mind the non-malignant diagnosis of distant lesion in those with malignancies, such as breast cancer.

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