American Journal of
Biomedical Science & Research

www.biomedgrid.com
ISSN: 2642-1747

Case Report

A Case of Mammary Schwannoma Originated from the Pectoral Muscle Nerve

Natsuko Mizutani[1,2*], Yayoi Kikawada, Minoru Matsuda, Hisaki Fukushima and Hiroshi Kanma

[1]*Department of medical technology Kyorin University School of Health Sciences, Japan*

[2]*Department of Immunological diagnosis, Juntendo University Graduate School of Medicine, Japan*

***Corresponding author:** Natsuko Mizutani, Department of Medical technology Kyorin University School of Health Sciences. Department of Immunological diagnosis, Juntendo University Graduate School of Medicine.

To Cite This Article: *Natsuko Mizutani*, Yayoi Kikawada, Minoru Matsuda, Hisaki Fukushima and Hiroshi Kanma, A Case of Mammary Schwannoma Originated from the Pectoral Muscle Nerve. Am J Biomed Sci & Res. 2024 21(4) AJBSR.MS.ID.002859,* DOI: 10.34297/AJBSR.2024.21.002859

Received: : January 30, 2024; **Published:** February 14, 2024

Introduction

Schwannoma, also called neurilemmoma, neurinoma, a kind of slow-growing benign neoplasm [1-3]. Schwannoma has a predilection for the head, neck, and extensor surfaces of the upper and lower extremities [4]. They can arise from Schwann cells of any nerve in any organ. However, 2.6% of schwannomas occur in the breast. Schwannoma is a clearly bordered painful tumor and rarely arises within breast parenchyma. Fibroadenoma is a common benign breast tumor with also clearly bordered image. We experienced a case of schwannoma originating from the pectoral muscle nerve, and it was difficult to distinguish preoperatively from a fibroadenoma of breast.

Case Presentation

A 58-year-old woman complained right breast pain. We palpated a tumor in the right breast of the upper outer quadrant, 2cm in diameter, oval shape and elastic soft in texture. The US showed a mass, oval and smooth, clearly bordered, suggesting a fibroadenoma (Figure 1).

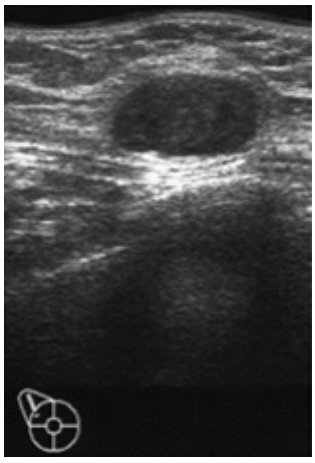

Figure 1: Ultrasonography.

Note*: Oval and smooth, clearly bordered, suggesting a fibroadenoma.

FNAC (Fine Needle Aspiration Cytology) expressive fatty cells and fibrous cells as well as stromal cells, with unconfirmed ductal cells (Figure 2). We reported 'inadequate specimen'.

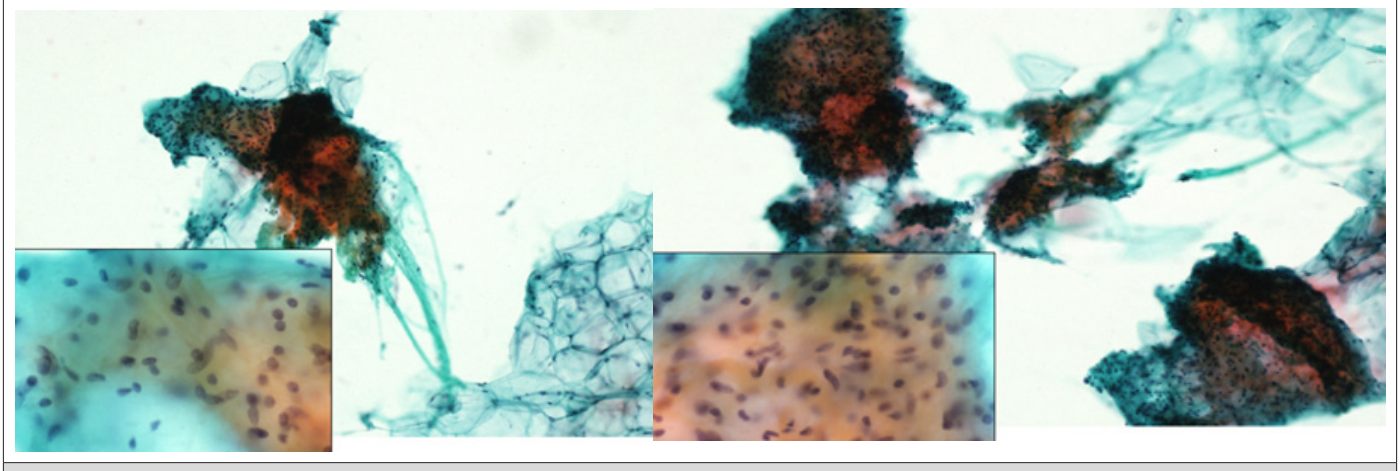

Figure 2: Cytology (FNAC).

Note*: There are fatty cells and fibrous cells as well as stromal cells.

No ductal cells were found in the specimens.

MMG showed a mass, regular and oval shaped, on the edge of the breast (Figure 3).

The tumor extirpated to confirm the histology of breast tumor. The tumor was easily exfoliated from the greater pectoral muscle under the mammary glands. The tumor, measuring 2.9×2.4×1.6cm in size, appeared to be covered by a capsule, and yellowish in color. The pathological examination revealed tumor cells were spindled in shape and had oval or elliptical nuclei. The tumor showed nuclear palisading (Antoni A) and pluricellular areas (Antoni B) in part (Figure 4).

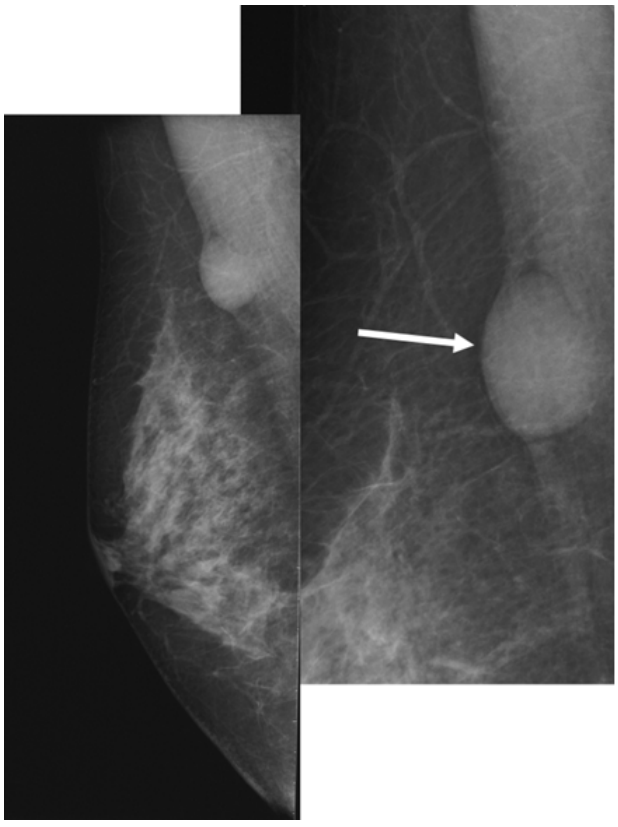

Figure 3: Manmography.

Note*: A shaped and round mass was observed on the edge of the breast.

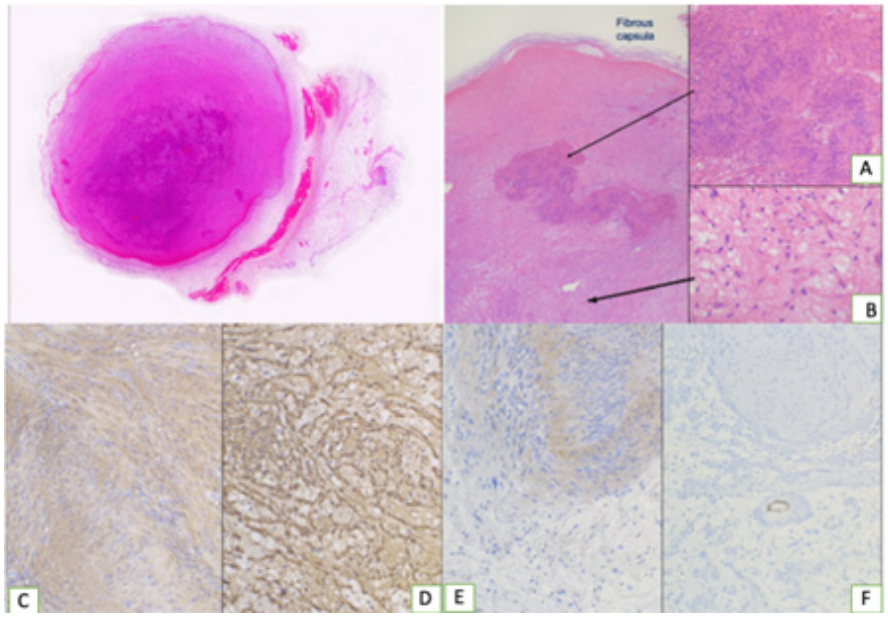

Figure 4: Pathology.
A. Part of Antoni A (HE).
B. Part of Antoni B (HE).
C. S100 (part of Antoni A)
D. S100 (part of Antoni B)
E. NSE
F. SMA

Note*: Tumor size, 2.9x2.4x1.6 cm.

Re-examination of MMG indicated a schwannoma originated from the pectoral muscle nerve. Retrospectively, the findings of FNAC specimen were not in contradiction in a schwannoma of Antoni B, although we could not confirm the findings of Antoni A. The mammary schwannoma should be considered in the cytological diagnosis of a patient with a painful tumor with clear borders.

Discussion

Schwannomas are derived from Schwann cells that form the myelin sheath of nerves, which facilitates the transmission of an impulse.[5] A schwannoma is a slow growing tumor that develops in the peripheral nerves or spinal roots [5]. Any part of the body can be affected but intramammary localization is rare. Breast schwannomas account for only 2.6% of all schwannomas, with an incidence of 0.2% of all breast cancer cases [1,2]. Pathologically, schwannomas have 2 components, known as Antoni A tissue and B tissue, in variable proportions, and these spindle cells show nuclear palisading and parallel arrays are known as Vero cay bodies [5]. In addition, schwannomas express S-100 protein on immunochemistry findings. Similarly, on cytological diagnosis of the present schwannoma case, the spindle cell was a vague palisading pattern that resembled a Vero cay body and S-100 was positive.

Clinically, a breast schwannoma is considered that has a very low risk of malignant transformation [6]. Therefore, core-needle biopsy should be performed for pathological diagnosis and for the purpose of treatment because of the recurrent nature of the breast tumor. By the way what about preoperative FNAC. Table 1 shows the classification used in Japan (Table 1). The classification is based on the Bethesda system for cellular diagnoway,. If we had followed this system faithfully, the epithelial component was not collected in this case, and the specimen would have been deemed inadequate. However, instead of no epithelial component, a strangely large amount of mesenchymal cellular component was collected. In retrospect, this should have been the focus of attention. The high stromal component of the stroma also differentiates it from fibroadenoma but note that the cellular morphology differs from the stroma of fibroadenoma.

Breast schwannoma is a peripheral nerve sheath tumor in these nerves. *Goose, et al*. [7] reported that only 5/99 (5%) patients with benign schwannomas experienced pain at rest. In contrast, 94/99 (95%) patients with benign peripheral nerve sheath tumor had pain induced by pressure.

In conclusion, we report a case of breast schwannoma, which is a rare tumor and its characteristics. This neoplasm is very difficult to differentiate due to its morphological features and location. It is important to recognize this tumor based on physical examination and imaging findings. And after the image test, cytologic and pathologic findings should always confirm the type of tumor. Furthermore, even if no epithelial component is seen in FNAC it is necessary to focus on other cellular components that are frequently sampled.

Table 1: Diagnostic report forms of fine needle aspiration cytology, for Breast.

Inadequate	No cells, No ductal cells
Adequate	No malignancy or benign (Mastopathy, cyst, fibroadenoma, etc)
	Indeterminate (Difficult to differentiate benign proliferative lesions from malignant lesions).
	Suspicious for malignancy (Difficult to determine due to a small number of cells suspected to be malignant).
	Malignancy

Note*: Reporting format established by the Japanese Society for Clinical Cytology.

Conflict of Interest

None.

Acknowledgement

None.

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