Case Report
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Porocarcinoma Arising in a Ganglion Cyst: A Case Report and Review of the Literature

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Eccrine porocarcinoma is a rare malignant neoplasm of the eccrine sweat gland that often occurs in the lower extremities, and usually affects elderly individuals. Most cases of eccrine porocarcinoma arise de novo. We encountered a case of a large porocarcinoma arising in a pre-existing ganglion cyst in the knee. The malignant tumor was excised widely, and the defect was reconstructed using a free anterolateral thigh flap.

Key Words: Ganglion cysts, Knee, Eccrine porocarcinoma, Anterolateral thigh flap

Eccrine porocarcinoma is a rare malignant neoplasm of the eccrine sweat gland. It often occurs in the lower extremities, and usually affects elderly individuals. Most cases of eccrine porocarcinoma arise de novo, and there has been no case of porocarcinoma arising in a ganglion cyst. Here, we report a case of a large porocarcinoma arising in a pre-existing ganglion cyst in the left knee of a 64-year-old man.

CASE REPORT

A 64-year-old man presented to our department with a mass on the medial side of the left knee. The mass, which had been clinically diagnosed of ganglion cyst and present for 40 years, had begun to grow progressively during the 5 months prior to his presentation. Clinically, the mass consisted of both solid and cystic components and measured 6 cm in diameter (Fig. 1).

Magnetic resonance imaging revealed an exophytic

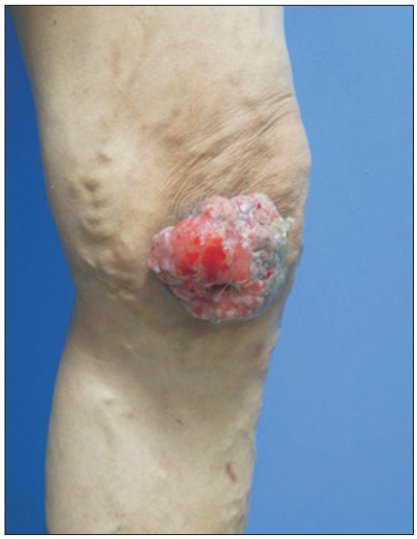

Fig. 1. Preoperative photographs shows the exophytic solid and cystic left knee mass (6×6×3 cm).

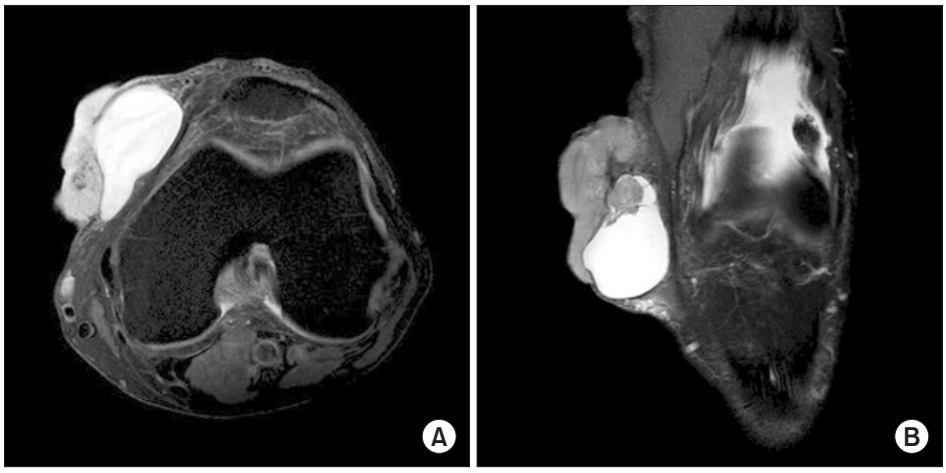

Fig. 2. (A) Preoperative T2-weighted axial magnetic resonance imaging (MRI) shows the left knee mass. The mass consisted of both solid and cystic components. The solid component is markedly hyperintense. (B) Preoperative T2-weighted coronal MRI shows the left knee mass.

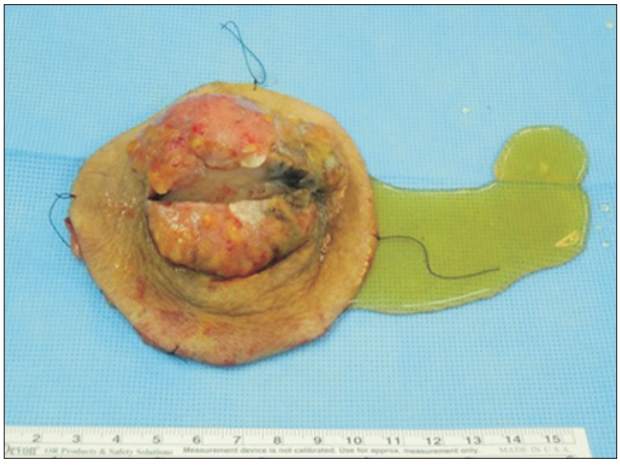

Fig. 3. Cystic fluid is drained from the specimen.

complex mass on the medial aspect of the left knee measuring 6.1×2.5×6.1 cm (Fig. 2). The solid component was markedly hyperintense and located deep in the subcutaneous fat layer. The cystic component abutted to the medial patellar retinaculum. The differential diagnosis included squamous cell carcinoma originating from a ganglion cyst, liposarcoma, or dermatofibrosarcoma protuberans.

A punch biopsy was performed to obtain a pathologic diagnosis and to plan treatment. The pathologic results confirmed squamous cell carcinoma. Positron emission tomography-computed tomography revealed enlarged lymph nodes with hypermetabolic activity in the left inguinal area and small-sized lymph nodes in the left iliac area, suggesting the possibility of metastasis in the lymph nodes.

Dissection of the left inguinal and external iliac lymph nodes was performed by general surgeons. Subsequently, wide excision of the tumor with a 2-cm margin was performed. The excised mass consisted of both solid and cystic components. After excision, an incision was made on the cystic portion and fluid was drained (Fig. 3).

Frozen section biopsies were performed at 11 sites, all of which were proved to be negative. The defect was reconstructed using a free anterolateral thigh flap harvested from the opposite side. The descending branch of the lateral circumflex femoral artery and venae comitantes were used as pedicles, while the inferior genicular artery and vein near the popliteal fossa were used as recipient vessels (Fig. 4, 5).

Final pathology results revealed the specimen to be a porocarcinoma with clear surgical margins, without metastasis in the lymph nodes (Fig. 6). At the 2-month follow-up, the wound had healed without any complications, and there was no clinical evidence of recurrence (Fig. 7). Physical examination including range of motion of the knee results remained unchanged, with no palpable regional lymph nodes.

DISCUSSION

Primary eccrine porocarcinoma is a rare malignant tumor of the sweat gland originating from the acrosyringium first described by Pinkus and Mehregan in 1963.[1] Although this tumor generally arises de novo, it also can occur as a malignant transformation of a pre-existing benign lesion.[2]

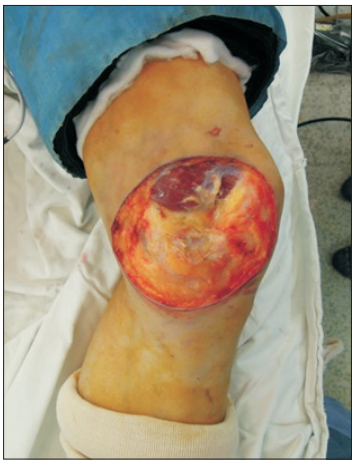

Fig. 4. The defect is left on left knee after wide excision.

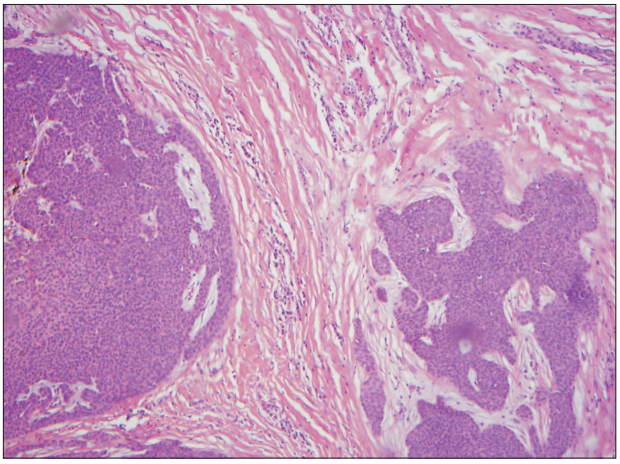

Fig. 6. Photomicrograph shows eccrine porocarcinoma. Nests of polygonal cells are sharply delimited from the adjacent epidermis (H&E, ×100).

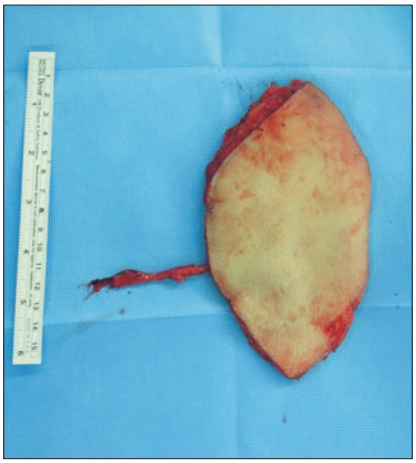

Fig. 5. The anterolateral thigh flap is harvested from the opposite side.

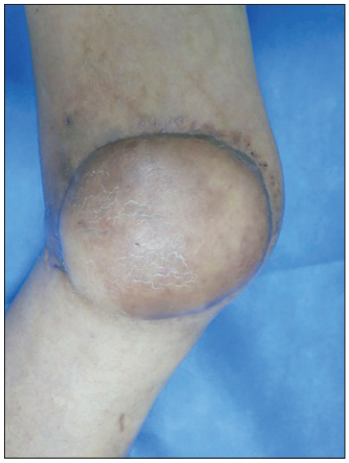

Fig. 7. At the 2-month follow-up, the wound had healed without any complications without evidence of recurrence.

Because of its heterogeneous histologic appearance, which may include presence of squamous, mucinous, clear, pigmented, and/or spindle cells, porocarcinoma can be misdiagnosed as other tumors, such as squamous cell carcinoma, adenocarcinoma, metastasis, melanoma, or sarcoma.[3] In our case, the first pathologic diagnosis was squamous cell carcinoma. Porocarcinoma commonly occurs in the lower extremities. Other locations affected include the head, neck, trunk, upper extremities, and vulva.[4] It occurs with higher incidence in women and in individuals aged approximately 70 years.[5]

There is no consensus on the treatment of this tumor. The optimal treatment for porocarcinoma is total surgical excision of the primary tumor with broad margins and regional lymph node dissection, if involved; the local recurrence rate after wide excision has been reported to be 20%.[6] Radiation therapy and chemotherapy seem to be ineffective in controlling tumor recurrence or metastasis.[7] Many other treatments have been described, including radiation, fulguration, amputation, and Mohs micrographic surgery.[6] Due to the limited number of dissertations and cases reports, more research is required to determine the optimal treatment plan.

Porocarcinoma is rare, especially those arising in a pre-existing lesion. In our case, the cyst and mass coexisted. The structure that appeared first in the lesion is debatable. Histologically, most of the cellular components of the cyst

wall were normal squamous or columnar cells, and only those minimal portions in contact with the tumor showed porocarcinoma characteristics. These findings suggest that the porocarcinoma developed from the cyst wall. Radiologically, the cyst wall lining was thin and linear, supporting the argument that the tumor grew from the cyst wall rather than the tumor cells went through cystic changes.

Similarly, there are a few reports of squamous cell carcinoma arising within an epidermoid cyst.[8] Reported rates of malignant change of an epidermal cyst into squamous cell carcinoma are very low, ranging from 0.011% to 0.033%.[9,10] There has been no report of malignant transformation of a pre-existing benign lesion into porocarcinoma. Therefore, this is the first reported case of porocarcinoma arising in a pre-existing ganglion cyst.

In conclusion, porocarcinoma arising from the wall of a ganglion cyst is extremely rare. However, if a pre-existing cyst suddenly increases in size, physicians should consider malignant transformation, including porocarcinoma. Although rare, porocarcinoma is a curable malignancy if it is accurately diagnosed and properly treated.

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