QUIZ SECTION

MJS PUBLISHING

Cutaneous Mass with Indurated Erythema in the Right Popliteal Fossa: A Quiz

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A 98-year-old man presented with persistent redness and swelling in the right popliteal fossa. His medical history included bladder cancer and a Baker's cyst in the same area, both of which were stably controlled. He had been treated for a month with oral antibiotics including roxithromycin and minocycline for suspected cellulitis, but his symptoms worsened.

Physical examination revealed a fist-sized subcutaneous mass, with overlying indurated erythema and mild tenderness without significant warmth (Fig. 1). He had no systemic symptoms. Laboratory examination showed elevated C-reactive protein (1.1 mg/dL), with no peripheral blasts. Infection markers were all negative. Computed tomography revealed no new masses aside from the known bladder cancer and the existing popliteal lesion, and no signs of infection around Baker's cyst.

What is your diagnosis?

1: Myxofibrosarcoma
2: Metastatic tumour
3: Dermatofibrosarcoma protuberans
4: Cutaneous lymphoma

See next page for answer.

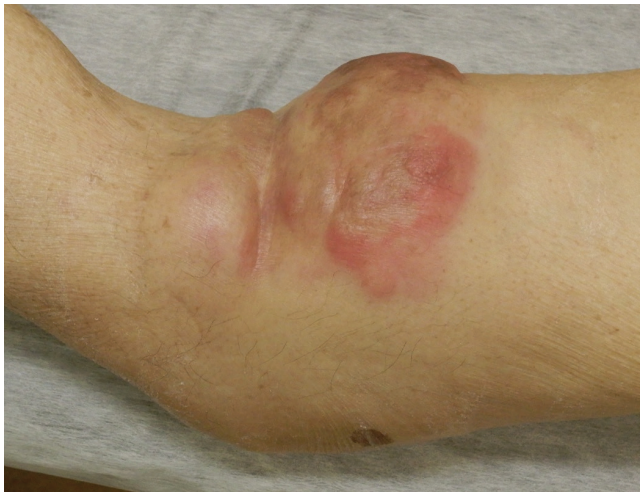

Fig. 1. Clinical photograph: a fist-sized cutaneous mass was present in the popliteal region, accompanied by an overlying erythematous plaque with induration. The lesion was mildly tender but not warm to the touch.

ANSWERS TO QUIZ

Cutaneous Mass with Indurated Erythema in the Right Popliteal Fossa: A Commentary

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Diagnosis: Myxofibrosarcoma

Myxofibrosarcoma (MFS) is a malignant fibroblastic tumour characterized by cellular pleomorphism, variably prominent myxoid stroma, and distinctive thin-walled, curvilinear blood vessels. It accounts for approximately 5–10% of all soft tissue sarcomas (1), typically affecting individuals in their 50s to 70s, with no clear sex predilection (2). While 70–80% of cases arise in the extremities, especially the upper limbs, MFS can also occur in the trunk, pericardium, head, and neck (3). It usually originates in the dermis or subcutaneous tissue but may also involve deeper locations like the subfascial or intramuscular compartments. Superficial MFS often appears multinodular with a gelatinous cut surface, whereas deep lesions tend to present as solitary, greyish, infiltrative masses (4). Tumour cells show features of fibroblastic differentiation and secretory activity. Although the precise pathogenesis is unclear, chromosomal instability is thought to play a key role, given the complex karyotype and multiple chromosomal abnormalities observed (5). Clinically, MFS typically presents as a painless, slow-growing mass. However, in high-grade tumours, local invasion and compression of adjacent anatomical structures may be observed (5).

Histologically, MFS is characterized by a variably prominent myxoid stroma containing spindle-shaped to stellate cells with nuclear atypia and pleomorphism, along with a distinctive curvilinear vascular pattern. The grade of MFS is based on cellularity, atypia, and mitotic activity, with high-grade tumours showing increased pleomorphism, necrosis, and mitoses (6, 7). Immunohistochemically, tumour cells are typically positive for vimentin. Focal positivity for α-SMA may be observed, suggesting partial myofibroblastic differentiation. In contrast, markers such as S-100 protein, desmin, and cytokeratin are consistently negative. Ki-67 is usually positive, and its labelling index correlates positively with the risk of recurrence, making it a useful prognostic marker (6, 7). Immunohistochemical staining showed that the spindle cells were positive for vimentin, with approximately 30% positivity for Ki-67 (Fig. 2A–B) and negative for cytokeratin, alpha-smooth muscle actin (αSMA), CD34, desmin, and S-100 protein.

Due to the absence of a specific immunohistochemical marker for MFS, diagnosis largely relies on cytomorphologic features. Differential diagnoses based on clinical and imaging findings include myxoma, myxoid liposarcoma, nodular fasciitis, spindle cell lipoma, and nerve sheath myxoma (6, 7).

The primary treatment for MFS is wide surgical excision with at least a 2 cm margin to reduce recurrence and metastasis since MFS has relatively higher rates of recurrence and metastasis. Therefore, preoperative imaging, including ultrasound, computed tomography, or magnetic resonance imaging, is essential to assess the anatomical extent of the tumour and its invasion into adjacent structures. For defects resulting from wide excision, reconstruction using pedicled or free tissue flaps can help restore both form and function (8). To further reduce the risk of local recurrence and distant spread, postoperative adjuvant therapies such as radiotherapy or chemotherapy may be incorporated into the treatment regimen. A randomized study involving various subtypes of soft tissue sarcomas demonstrated the efficacy of radiotherapy in reducing recurrence rates (9). Thus, in cases where complete surgical resection is not feasible or for patients with recurrent disease, radiotherapy is considered a recommended option. For patients with distant metastases, chemotherapy, most commonly using agents such as anthracyclines and cyclophosphamide, is typically employed (10).

In the present case, the patient initially presented with redness and swelling in the area where a Baker's cyst had previously been noted. Based on this clinical finding, the referring physician suspected an infected Baker's cyst and initiated antibiotic therapy; however, the response to treatment was poor. CT revealed no findings suggestive of infection, and the possibility of a Baker's cyst infection or cellulitis was considered unlikely. Given the patient's history of bladder cancer, differential diagnoses included metastatic cutaneous tumour, cutaneous lymphoma, or dermatofibrosarcoma protuberans (DFSP). Histopathological

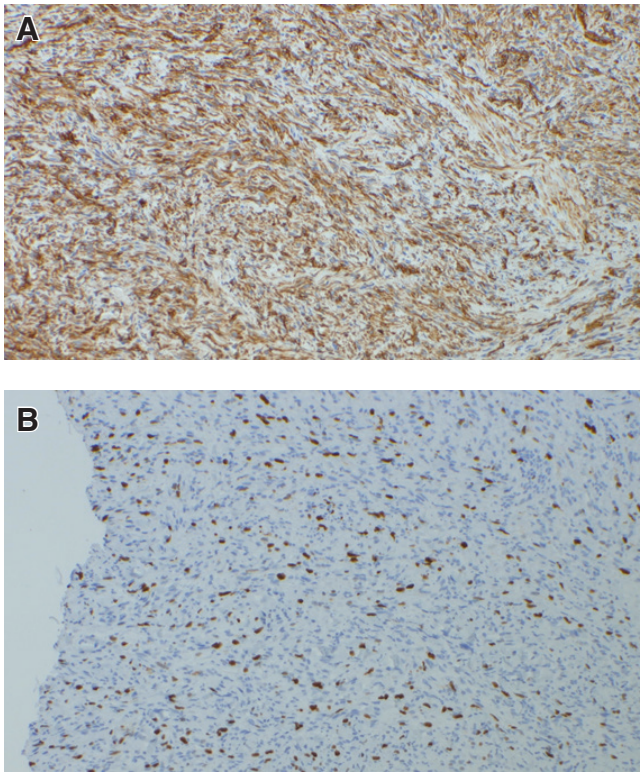

Fig. 2. Histopathological findings of the mass. (A) The proliferating atypical spindle-shaped cells were positive for vimentin (×100). (B) Immunohistopathological findings of the mass: approximately 30% of the proliferating atypical cells were positive for Ki-67 (×100).

examination of the mass showed diffuse proliferation of spindle-shaped tumour cells throughout the dermis, with nuclear pleomorphism, mitotic activity, and infiltration into adnexal structures and arrector pili muscles (Fig. 3A–B). Mucinous material was observed around atypical cells, with no macrophages or multinucleated giant cells (Fig. 3C). Approximately 30% of the cells were positive for Ki-67, suggesting a malignant spindle cell neoplasm. High-power magnification also showed mucinous material surrounding the tumour cells, leading to the diagnosis of myxofibrosarcoma. Although atypical spindle cell proliferation was observed, there was no evidence of erythrocyte extravasation, effectively ruling out nodular fasciitis. Immunohistochemical staining was negative for α-SMA, CD34, desmin, S-100 protein, and cytokeratin, thus excluding differential diagnoses such as squamous cell carcinoma, metastatic cancer, leiomyosarcoma, and DFSP. This case represents a myxofibrosarcoma arising in the same region as a previously identified Baker's cyst. Although an infected Baker's cyst was initially suspected due to the patient's history, skin biopsy and immunohistochemical findings ultimately led to the diagnosis of myxofibrosarcoma. This case highlights the importance of reconsidering the diagnosis and expanding the differential when the clinical course deviates from the expected trajectory.

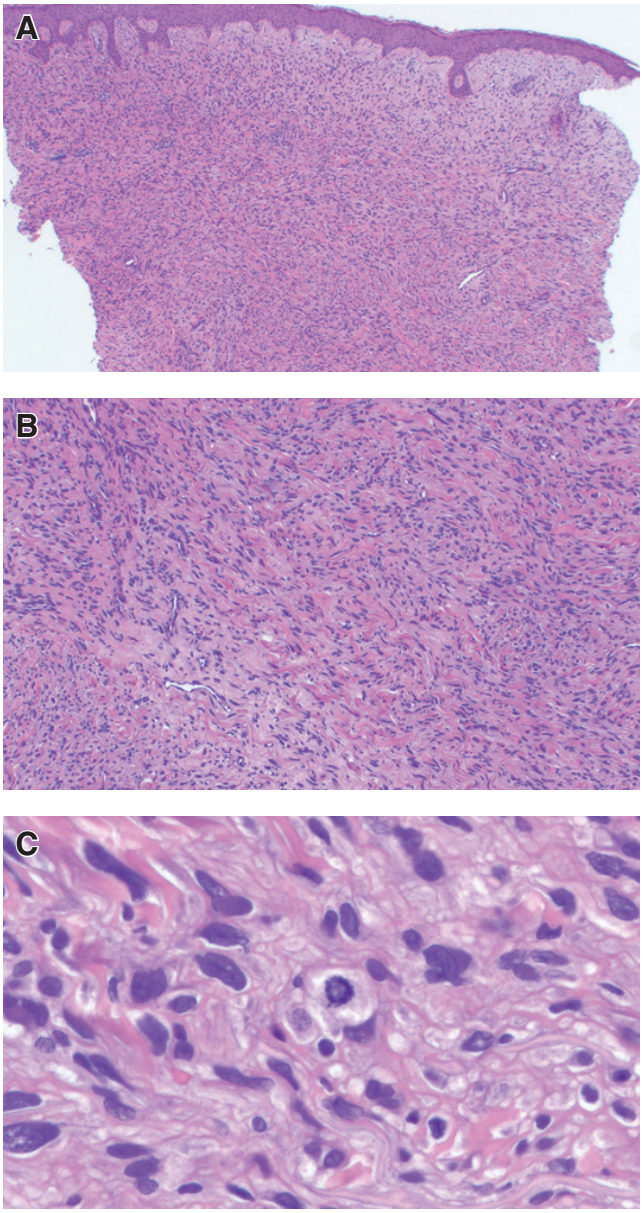

Fig. 3. Histopathological findings of the mass. Histopathological examination revealed proliferation of (A) atypical spindle-shaped cells throughout the entire dermis (haematoxylin and eosin (H&E) staining ×40), (B) spindle-shaped tumour cells. (C) The tumour cells exhibited nuclear pleomorphism and mitotic figures and infiltrated adnexal structures and arrector pili muscles (haematoxylin and eosin (H&E) staining ×100). Mucinous material was also observed surrounding the atypical cells (haematoxylin and eosin (H&E) staining ×400).

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