CASE REPORTS

SYNOVIAL SARCOMA

Sisir K. Sen, MD, FRC Pathol, FCAP, and Wallace T. Dooley, MA, MD
Nashville, Tennessee

Joints and adjacent tissue are probably the site of origin of synovial sarcomas. From the literature review, however, it appears that in some instances synovial sarcoma may be of extra-articular soft tissue origin. This type of tumor should be considered highly malignant. It appears that the incidence is low among black Americans. The etiology is not known definitely, but trauma is incidental rather than a predisposing factor.

Synovial sarcoma has no race predilection, but it is less common in blacks. In a series of 345 cases, Enzinger[1] found only 10 percent occur in blacks, and in the Tumor Registry of George W. Hubbard Hospital of Meharry Medical College, established in 1954, only two cases were found. After reviewing slides and the morphology of these two cases, only one authenticated case was found. It seems among soft tissue malignancy, synovial sarcoma is rare. In a series of 717 cases of soft tissue malignancies, Pack and Ariel[2] found only 60 cases. As only one case was found at Hubbard Hospital, this disease is assumed to be rare among black Americans.

CASE HISTORY

A 27-year-old black woman came to the orthopedic service of Hubbard Hospital in September 1985 complaining of a lump on the dorsal aspect of her right foot. She gave a history of trauma sustained in the same area about three months earlier. She later noticed persistent swelling on the dorsum of the foot, at the root of the first and second toe. She complained of experiencing pain in the same area for three or four days before seeking medical help.

On physical examination, a tender, more or less circumscribed, elevated lesion was noted. It measured about 4 cm in diameter and was located on the dorsum of the right foot between the great and second toes (Figure 1).

Radiographic examination revealed a lobular mass in the same area. The bones were not involved, and the lesion showed spotty radio-opacities due to deposition of calcium (Figure 2). A biopsy was done, and the pathologist concluded that it was a biphasic synovial sarcoma. This was confirmed by the Armed Forces Institute of Pathology, Washington, DC.

Histologically, the lesion showed sarcomatous areas composed of atypical spindle cells with very little fibrous stroma and other gland-like spaces lined by cuboidal cells. Electron microscopic study showed a biphasic pattern of the lesion (Figure 3).

DISCUSSION

In 1927 Smith[3] reported three malignant lesions arising from synovial membrane. He called them "synoviomata." Ghadialy and Roy[4] were able to produce synovial sarcoma in and around the knee joints of albino rats by injection of dimethylbenzantracene (DMBA).

Regarding the anatomic location, the disease appears to be more common in the lower extremities. In a series of 134 lesions, Cadman and Soule[5] found 95 (70.9 percent) located in the lower extremity, the thighs being the most frequent site. Nineteen cases

From the Departments of Pathology and Surgery, George W. Hubbard Hospital of Meharry Medical College, Nashville, Tennessee. Requests for reprints should be addressed to Dr. S. K. Sen, Department of Pathology, Meharry Medical College, 1005 D.B. Todd Boulevard, Nashville, TN 37208.

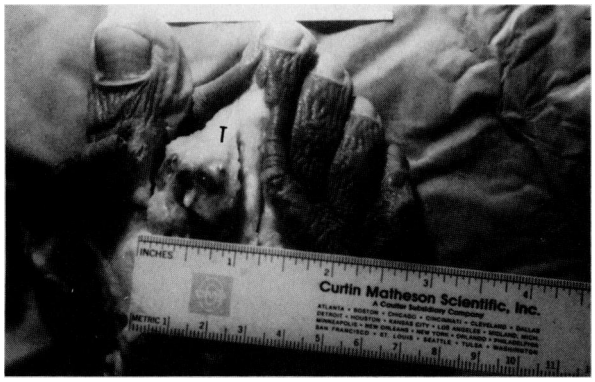

Figure 1. Gross appearance of the tumor (T) showing hemorrhage

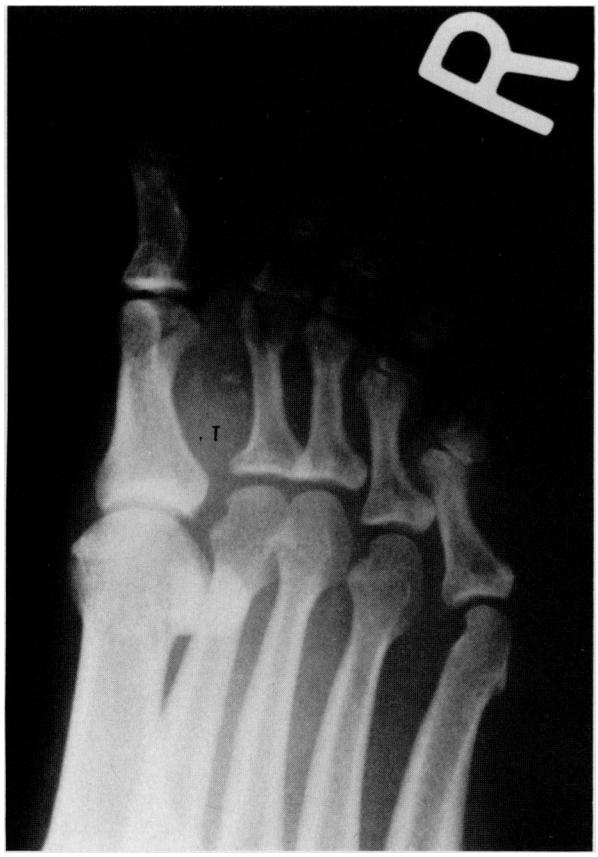

Figure 2. The tumor (T) shows spotty calcification

in this series occurred in the foot. Enzinger[1] in a similar study of 345 cases, found 102 (59.7 percent) in the lower extremities, of which 45 affected the foot. In a review of 60 cases, Pack et al[2] found 34 (56.7 percent) affecting the lower extremities. In this series,

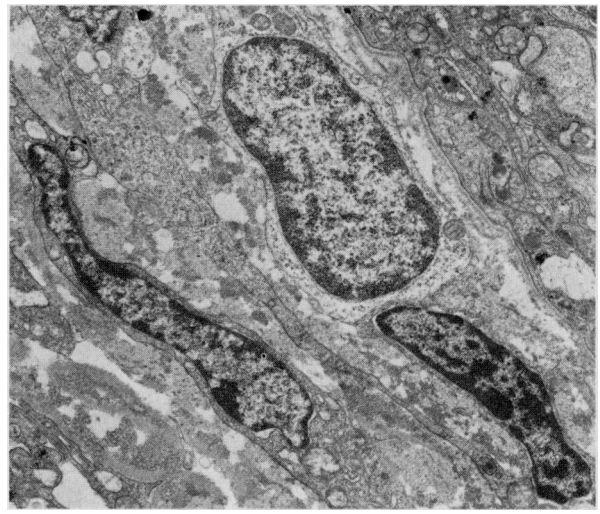

Figure 3. The biphasic pattern of the lesion as seen on electron microscopy

the knee was the most frequent location (21.7 percent) followed by the foot (18.3 percent).

There was a history of trauma in most cases. No relation, however, was established between the injury and the genesis of the disease, even though the lower extremities are more vulnerable to injury, especially in children who are injured frequently.

It seems that trauma is rather a coincidence and not a causative factor, even though the lesions are found more often in the lower extremities.[1] Trauma probably causes hemorrhage in the lesion, making it larger and therefore more noticeable to the patient.

The dystrophic calcification in a synovial sarcoma is not unusual; the deposition may be extensive or rather minimal. Extensive calcium deposition, especially in tumors with biphasic patterns, reflects a better prognosis.

Follow-up studies by Varela-Duram and Enzinger[6] of 32 patients—all of whom had extensive deposition of calcium in the lesion—indicate a more favorable survival rate with a higher five-year survival rate. Occasionally, calcification with chondrification has been noted in synovial sarcomas.[2]

The para-articular area is the common site of origin of synovial sarcomas. Cases have been reported arising from some unusual sites, such as the soft palate immediately over the tonsil.[7] A similar tumor, noted to be arising from the base of the tongue, was reported in Tehran.[8] Attie et al[9] reported a case in a 15-year-old girl whose lesion was present in the left side of the neck.

continued on page 1093

continued from page 1090

The recurrence rate is rapid in some instances. In other cases, however, it is very slow and prolonged. Sutro[10] reported a case with a biphasic pattern that recurred 35 years after the excision of the primary lesion. A three-year postoperative follow-up revealed no recurrence.

The histogenesis of these lesions is not yet fully known. Though the common site is the para-articular area, especially of the extremities, it still does not mean that the lesion arises from the synovial tissue.

Abenoza et al[11] concluded from the results of immunochemical techniques correlated with ultrastructural observations that synovial sarcoma, including the monophasic variant, is a mesenchymal tumor with epithelial features.

The lesions may vary in size. At times, the lesion may escape visual recognition, but clinical symptoms, such as pain, are common complaints. Ichnose et al[12] reported a lesion of 4.4 mm^3 in the deep fascia that under microscopic examination proved to be synovial sarcoma. The patient had complained of having severe tenderness in the right thigh for 18 months.

Roentgenographic findings may be of considerable help. The lesion, on x-ray film, appears round to oval, lobulated, with moderate density, and is located near the para-articular region. About one third to one half of patients show the presence of multiple or small radio-opacities due to the deposition of calcium.

There is no general agreement as to the therapy for this lesion. Drastic surgery, followed by radiation, seems to be the standard, acceptable procedure. In one instance, complete excision of a recurrent lesion, after a 35-year follow-up study, revealed no recurrence.[10] Among 60 patients observed in Memorial Hospital, the five-year survival rate for 23 patients with involvement of the lower extremities was 21.7 percent. The best result was obtained by wide resection followed shortly thereafter by postoperative radiation.[2]

Acknowledgment

Mr. E. Brown, Radiology Department; Mr. Brooks, Department of Anatomical Sciences; and Mrs. L. Fizer, Tumor Registry, Meharry Medical College, provided assistance with the preparation of this paper. Mrs. Ella Suddeth prepared the manuscript.

Literature Cited

1. Enzinger FM, Weiss SW. Soft Tissue Tumors. St. Louis: C. V. Mosby, 1983, pp 519–549.
2. Pack GT, Ariel IM. Synovial sarcoma (malignant synovioma). Recent Adv Surg 1950; 28:1047–1084.
3. Smith LW. Synoviomata. Am J Pathol 1927; 111:355–364.
4. Ghadialy FN, Roy S. Experimentally produced synovial sarcoma. Cancer 1966; 19:1901–1908.
5. Cadman NL, Soule EH. Synovial sarcoma—An analysis of 134 tumors. Cancer 1965; 18:613–627.
6. Varela-Duram J, Enzinger FM. Calcifying synovial sarcoma. Cancer 1982; 50:345–352.
7. Massarelli G, Tanda F, Salis B. Synovial sarcoma of the soft palate. Report of a case. Human Pathol 1978; 9:341–345.
8. Moussavi H, Ghodsi S. Synovial sarcoma of the tongue. A report of a case. J Laryngol Otol 1974; 88:795–797.
9. Attie JM, Steckier RM, Platt N. Cervical synovioma—Synovial sarcoma. Cancer 1970; 25:758–761.
10. Sutro J. Synovial sarcoma of the soft parts in the first toe: Recurrence after thirty-five year interval. Bull Hosp Jt Dis 1976; 37:105–109.
11. Abenoza P, Marivel C, Swanson P, Wick HR. Synovial sarcoma: Ultrastructural study and immunohistochemical analysis by a combined peroxidase-antiperoxidase/aridin-biotin peroxidase complex procedure. Hum Pathol 1986; 17:1107–1115.
12. Ichnose H, Powell L, Hoerner HE, et al. The potential histiologic relationship of the peripheral nerve to synovioma. Cancer Res 1979; 39:4270–4273.