

INTRAARTICULAR INVOLVEMENT BY SYNOVIAL SARCOMA: FIRST DIAGNOSED ON SYNOVIAL FLUID ASPIRATION

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ABSTRACT

Synovial Sarcoma is a soft tissue neoplasm having incidence 6%-10%. Malignant cells in synovial fluid aspiration is extremely rare. Only 5% cases have been reported to have joint cavity involvement. We report a case of synovial fluid malignant effusion of knee joint in a 35 year old male who presented with a left popliteal fossa swelling. Synovial fluid aspiration revealed tumor cell clusters with anaplastic morphology. Subsequent biopsy showed spindle cell tumor consistent with synovial sarcoma. This is a rare presentation of synovial sarcoma with the presence of malignant cells in synovial fluid.

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INTRODUCTION

Synovial sarcoma is a soft tissue neoplasm with the incidence of 5-10%. It occurs commonly in adolescents and young adults. Although it is often found to be in close association with tendon sheaths, bursa, and joint capsule; it is unusual for it to involve the joint. It rarely involves synovial membrane. Less than 5% synovial sarcomas arise within joint space (1). Synovial sarcoma are often misdiagnosed as benign lesion on biopsy. Chow LT reported a case of epitheloid sarcoma of knee joint mimicking pigmented villonodular synovitis. Bergovec et al reported a case of lateral meniscus synovial sarcoma (2). Age, gender of patient, size, effusion and calcification are helpful in differentiating intra articular synovial sarcomas from localized PVNS (3).

CASE REPORT

A 35 year old male presented with swelling at posterior aspect of left knee joint for 10 months & painful since 15 days. Clinical Examination showed a non tender 8 x 6 cm, firm to hard swelling, causing restriction of knee flexion. Routine hematological investigations were within normal limit. X-ray showed Mass in popliteal fossa. Synovial fluid was aspirated and sent for cytology followed by biopsy from the tumor.

Approximately 4 ml straw colored synovial fluid was received. Smears were made & stained with H & E. Microscopic examination was done. Cellular smears made from synovial fluid revealed clusters & singly scattered spindle to ovoid atypical cells admixed with

lymphocytes. Cells had high nucleocytoplasmic ratio, irregular nuclear contour clumped chromatin & prominent nucleoli at places (Figure 1). Following which an impression of synovial fluid positive for malignant- spindle cell lesion was made and patient was advised biopsy for confirmation of diagnosis.

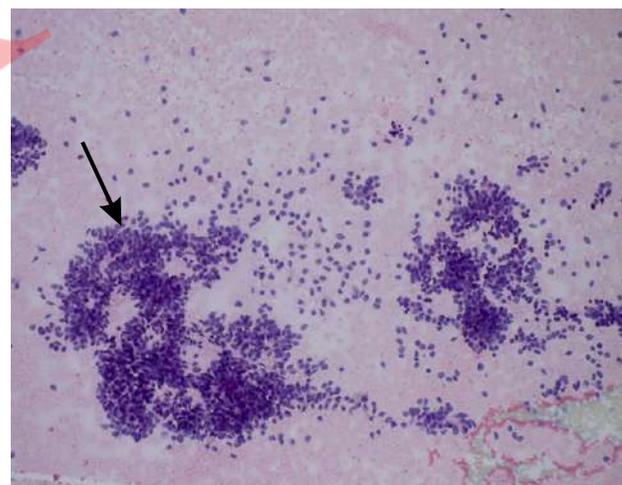


Fig 1: (H&E;10X) Photomicrograph From Synovial Fluid Aspiration Shows Spindled To Ovoid Cells With High Nucleocytoplasmic Ratio Irregular Nuclear Contour, Clumped Chromatin And Prominent Nucleoli At Places

A small biopsy (0.8cm) consisting of grey white soft tissue piece was received at our histopathology department. Tissue was processed and H&E stained sections were prepared. Section showed atypical

spindle to ovoid cells arranged in interlacing bundles & fascicles. Tumor cells were moderately pleomorphic with hyperchromatic nuclei & finely clumped chromatin. Interspersed in these spindle cells were cleft like spaces (figure 2). Tumor cells did not stain for PAS stain. Immunohistochemistry revealed vimentin positivity in spindle cell elements and cytoplasmic expression of pancytokeratin in interspersed ovoid cells. A histopathological diagnosis of synovial sarcoma was made.

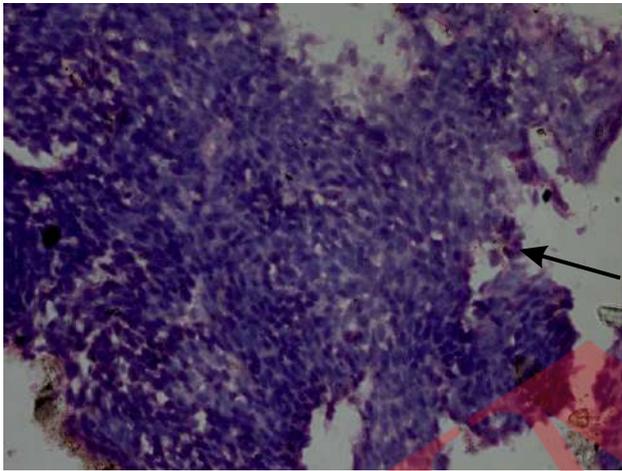


Fig 2: (H&E; 10X) Photomicrograph Shows Atypical Spindle To Ovoid Cells Arranged In Interlacing Bundle And Fascicles. cells Have Pleomorphic Hyperchromatic Nucleus

DISCUSSION

Synovial Sarcoma is a soft tissue neoplasm having incidence 5%-10%. Most cases present with a periarticular soft tissue mass, but now it is being observed that it can arise from any organ and anatomic site. Intraarticular synovial sarcoma is very rare. Aspiration biopsies of synovial sarcomas yield moderately and more frequently highly cellular smears. Each cell shows a solitary ovoid nucleus with finely granular, hyperchromatic chromatin with inconspicuous nucleoli. The neoplastic elements have mostly scant cytoplasm. A small number of neoplastic cells have more abundant cytoplasm which appears as bipolar tapered cytoplasmic tails. The shape of individual neoplastic nuclei vary from blunt and ovoid to elongated and spindled. In some cases the neoplastic elements exhibit a distinct epithelial differentiation as polygonal contours and solitary round hyperchromatic nuclei. The nuclei are central or eccentric and the cytoplasm is vacuolated. Immunocytochemically positive reactivity for epithelial markers (eg : the various cytokeratin) assists in the differential diagnosis with other spindle cell sarcomas. Histologically synovial sarcoma has two patterns monophasic & biphasic pattern. Monophasic pattern is characterized by spindle cell in

bundles and fascicles with hemangiopericytoma like foci. Biphasic pattern is characterized by epithelial cell component disposed as glands and nests along with fibroblast like spindle cell. Poorly differentiated synovial sarcoma is difficult to identify due to considerable overlap with other variants. It is characterized by primitive round cell. Immunohistochemistry for EMA and CK is positive in both spindle and epithelial cell elements. It also shows positivity for keratins, desmoplakin, Leu-7, and S-100 protein.

Radiological findings are not pathognomic but a calcified lesion near a joint is suggestive of diagnosis. MRI shows triple sign, bowl of grapes sign. On MRI, the lesion is hypointense on T1-weighted (T1W) and hyperintense on T2-weighted (T2W) images and demonstrates multilobulation and marked heterogeneity (creating the “triple sign”) with haemorrhage, fluid levels and septa (creating the “bowl of grapes” sign) (Figure 3) (2). Slow growth (average time to diagnosis, 2–4 years) and small size (< 5 cm at initial presentation) of the lesion may result in a mistaken initial diagnosis of a benign indolent process.

Aisner SC described two cases of synovial sarcoma diagnosed by aspiration cytology he showed the utility of aspiration cytology in diagnosing both unsuspected and recurrent synovial sarcoma (4). Kilpatrick SE studied 13 fine-needle aspiration specimens from 10 patients with histologically proven synovial sarcoma and concluded that synovial sarcoma could be diagnosed with FNAB but clinically and histological correlation is necessary to confirm the diagnosis especially in monophasic variants (5).

We report this case as it was first suspected to be synovial sarcoma on synovial fluid cytology which showed spindle to ovoid malignant cells which was further confirmed as synovial sarcoma on biopsy from main tumor mass in popliteal fossa. Justin E et al reported two cases of primary intra articular synovial sarcoma of Knee (6). Ahana Gupta et al reported a case of monophasic synovial sarcoma in a 14 year old boy (7).

Synovial sarcoma metastasizes to lung and lymph nodes. Local recurrence is common and carries a poor prognosis. Detection of cytogenetic alteration $t(X;18(p11.2;q11):SYT-SSX1$ gene and $t(X;18)(p11.21;q11):SYT-SSX2$ fusion gene by PCR helps in further confirming the diagnosis (8-9).

CONCLUSION

Synovial sarcomas secondarily involve joint space, primary involvement of synovium by sarcoma is extremely rare. Mostly these cases are diagnosed by biopsy but in this case it was diagnosed first on synovial fluid cytology. Early diagnosis of primary

tumor & recurrence by synovial fluid cytology can lead to early detection of tumor which will lead to better prognosis.

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