DOI: http://doi.org/10.4038/jdp.v14i2.7776 *Journal of Diagnostic Pathology 2019;14(2):25-27*

Answer to quiz, discussion, and conclusion

D.N.U. Jayatunge[1], S.M. Fernandopulle[2]

1.Department of Pathology, Faculty of Medicine, University of Kelaniya

2. Department of Pathology, North Colombo Teaching Hospital

Answer to quiz

The smears showed clusters and sheets of spindle cells in a myxoid stromal background. (Figure 1-3). These spindle cells showed ovoid vesicular nuclei with mild nuclear pleomorphism. The cytoplasm is eosinophilic and ill defined. There were no mitoses or necrosis. Cytology was concluded as a low grade myxoid spindle cell neoplasm and histological assessment was recommended for a definite diagnosis.

Resected tumour comprised four fragments of firm tissue measuring 20x12x8mm in aggregate. Histology showed a typical schwannoma composed of hypocellular and hypercellular areas. The hypercellular areas were composed of bland spindle cells forming Verocay bodies (Antoni A). These areas alternated with loosely arranged hypocellular areas with myxoid change (Antoni B). Interspersed thick walled hyalinized blood vessels were present in the stroma. No sarcomatous changes were seen. (Figure 4-5)

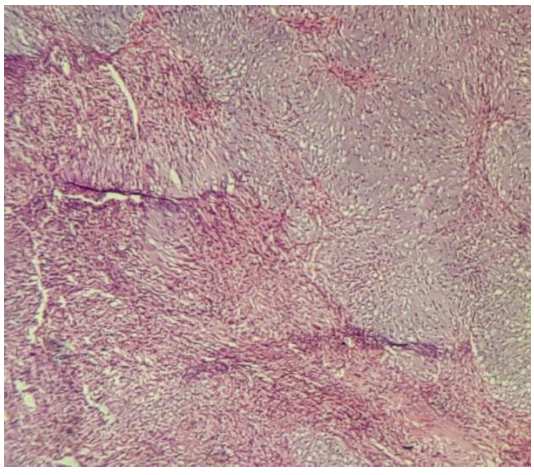

Figure 4: Hypercellular and hypocellular areas of the Schwannoma (H&E x 40)

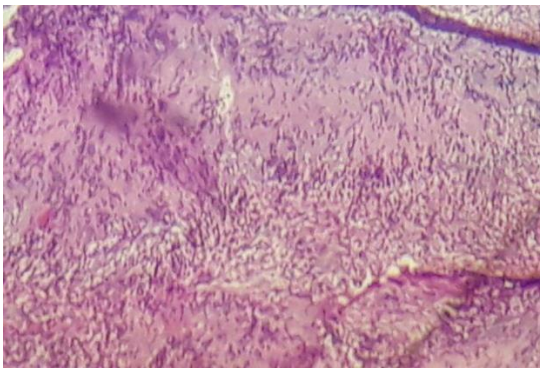

Figure 5: Verocay bodies of the Schwannoma, (H&E x100)

Discussion

The diagnosis of soft tissue tumours (STT) in cytology is challenging [1]. If the smears show discohesive cells of variable morphology including round, spindle, pleomorphic or polygonal cells, in a background of myxoid stromal fragments it is indicative of a myxoid STT. The myxoid nature can be appreciated if the smear is thick, minimally haemorrhagic and often appears as droplets of glue when smearing on the slide. On low power view the myxoid matrix appears faintly pink and green in H&E and Pap stains respectively [2].

The common benign myxoid soft tissue lesions with low cellularity and minimal cellular atypia includes ganglion, myxoma, and myxoid nodular fasciitis.

Ganglion is characterized by reduction in size or disappearance of the nodule following aspiration [3]. The aspiration reveals a thick, gelatinous, and mucoid fluid usually forming thick folds on the slide and smears are markedly hypocellular containing few macrophages in a myxoid background [4].

Droplets of a highly viscous fluid is characteristic of an aspirate from a myxoma. The smears are generally hypocellular showing cells with elongated cytoplasm and spindle-shaped nuclei lack of atypia [5].

Myxoid nodular fasciitis shows a cellular aspirate in a background of myxoid material, inflammatory cells, and delicate branching vessels. There are numerous solitary spindle-shaped and stellate myofibroblastic cells [6].

None of these features were present in this case.

The other possibility that should be considered for smears composed of spindle cells in myxoid stroma, low cellularity and minimal atypia is a low grade fibromyxoid sarcoma. However, the cytologic features of this entity are not specific for a definitive diagnosis based on FNAC alone [7].

Myxoid sarcomas like extraskeletal myxoid chondrosarcoma (EMC) was not considered as a possibility since it involves deep soft tissue and cells are more rounded and in clusters. Myxoid liposarcoma and myxofibrosarcoma were also disregarded as these are deep seated tumours that show high cellularity and varying degrees of cellular atypia. Moreover, myxoid liposarcoma has lipoblasts and show characteristic branching capillary vessels [3] which were not evident in our case.

The myxoid DFSP was a remote possibility. However, in this lesion the cells were monotonous and at least few cells in mitoses should be evident.

Another common benign spindle cell tumour with myxoid background is a schwannoma.

Schwannomas are commonly seen in the head and neck region but can occur in any part of the body in superficial or deep locations. These usually originate from peripheral nerves and are solitary, slow growing tumours. They are well circumscribed, encapsulated, round to ovoid and firm in consistency [8]. Schwannoma is common in females and can occur in all ages. It is most commonly seen in the age group 20 to 40 years [9]. Schwannoma does not have infiltrating margins and hence shifts laterally during palpation. During the biopsy procedure it may cause paresthesia or “electric shock” pain.

The typically painful four STT include schwannoma, angiolipoma, angiomyoma and glomus tumour. Since this patient also experienced excruciating pain during FNAC the possibility of a neural lesion was considered.

The cytomorphological features of schwannoma include spindle cells of variable cellularity. These cells are arranged in clusters and rarely seen scattered individually. The tumour cells are spindle shaped and rarely, epithelioid. The nuclei are uniformly wavy and devoid of nucleoli. When tissue fragments are obtained, tumour cells lie in a homogenous or fibrillary myxocollagenous stroma. Occasionally, palisades of nuclei (Verocay bodies) may be seen and are of immense diagnostic value. The patchy areas of hypercellularity and rarity of single cells also support the diagnosis of a schwannoma [10]. Schwannomas can show atypical spindle cells due to degeneration which may create a diagnostic challenge on cytology particularly in differentiating benign from low-grade STTs.

In this case, the cellularity was high, and the cells showed mild pleomorphism but no mitoses or necrosis. Even though there were no overt malignant features, it was difficult to conclude the cytology as completely benign because other low grade myxoid sarcoma and areas of high-grade sarcomas can have similar appearance in cytology. Therefore, we concluded cytology as a low grade myxoid spindle cell neoplasm and suggested histology for definite diagnosis.

Conclusion

Interpretation of cytology in the diagnosis of STT is challenging. FNAC has limitations related to accurate diagnosis of sarcomas

attributed to the fact that a majority of STT show morphological heterogeneity.

The role of FNAC should be limited to differentiate benign from malignant STTs including low-grade STTs, due to differences in prognosis and management of these tumours. The histological assessment is mandatory for definite diagnosis and grading of STT.

References

1. Rekhi B, Gorad BD, Kakade AC, Chinoy R. Scope of FNAC in the diagnosis of soft tissue tumors--a study from a tertiary cancer referral center in India. *Cytojournal*. 2007; 4:20. Published 2007 Oct 31. doi:10.1186/1742-6413-4-20.
2. Choudhuri MK. Cytology of soft tissue tumours: Cytological classification of soft tissue tumours. J Cytol 2008; 25:79-80.
3. Wong NL, DI F. [Fine needle aspiration cytology of myxoid lesions of soft tissues: a study of 24 cases]. Zhonghua Bing Li Xue Za Zhi. 2007 Sep;36(9):619-23. Chinese. PMID: 18070452.
4. Sharma P, Gupta R, Bhardwaj S, Mahajan M. Cytomorphological evaluation of synovial lesions in a tertiary care centre in North India: A retrospective study. J Cytol 2020;37;166-9.
5. Akerman M, Rydholm A. Aspiration cytology of intramuscular myxoma. A comparative clinical, cytologic and histologic study of ten cases. Acta Cytol. 1983 Sep-Oct;27(5):505-10. PMID: 6578649.
6. Edmund S. Cibas, Barbara S. Ducatman. Cytology. Third Edition. W.B. Saunders; 2009; Chapter 16 - Soft Tissue: 451-494.
7. Lindberg GM, Maitra A, Gokaslan ST, Saboorian MH, Albores-Saavedra J. Low grade fibromyxoid sarcoma: Fine-needle aspiration cytology with histologic, cytogenetic, immunohistochemical, and ultrastructural correlation. Cancer. 1999 Apr 25;87(2):75-82.
8. Hui-Chi KU, Yeh CW. Cervical Schwannoma. A case report & eight years review. Journal of Laryngology and Otology. 2000;114(6):414–417.
9. Subhashish D, Kalyani R, Harendra Kumar ML. Vulval Schwannoma: A Cytological diagnosis. Journal of cytology. 2008;25(3):108-110.
10. Sidawy MK, Ali SZ. Fine Needle Aspiration Cytology 2007; chapter 4: 104-6.