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**Molecular testing in histologically benign spindle cell proliferations****Atif A Ahmed**

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**H**istologically low grade spindle cell tumors in children are mostly benign and easily cured. Infrequency, such tumors can be infiltrative, commonly recur and are difficult to classify and surgically excise. Molecular tests including next generation sequencing have greatly facilitated the diagnosis and the treatment of highly malignant tumors but are rarely utilized in the management of undifferentiated low grade spindle proliferations. In the last three years, we have encountered two unusual cases of histologically benign infiltrative spindle cell proliferation in children that were studied by whole exome sequencing. The first case was that of a 20-cm abdominal mass that extended to the pelvis in a young child. The histology revealed bland spindle cell proliferation that infiltrated skeletal muscles and adipose tissue. The CD34-positive cells did not show any immunoreactivity to any other marker. Whole exome sequencing revealed *NF1* gene mutation suggesting origin from peripheral nerve sheath. The second case was that of an infant who had right a nasal tumor involving the maxillary sinus and turbinates and extending to the skull base. The recurrent tumor shows focal early osteoid formation and was negative for *ALK*, *CTNNB1* and *GNAS* mutations. Exome sequencing revealed RET Glu511Lys variant. In both cases, potential benefit by several tyrosine kinase inhibitors was revealed. In conclusion, molecular sequencing for actionable mutations is valuable in the management of low grade infiltrative spindle cell lesions in children.

**Biography**

Atif A Ahmed is Professor and Director of Anatomic Pathology Division at the Department of Pathology of Children's Mercy Hospitals, Kansas City, USA. He has graduated from University of Khartoum in 1988, completed residency and fellowship training in Pathology and is certified by the American Board of Pathology. He has published more than 50 peer-reviewed articles as well as several book chapters; and is a book editor of "Anatomic and Clinical Pathology Board Review" and "Gastrointestinal Stromal Tumors in Adults and Children". He is on the editorial board of several journals.

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