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Correlation of histomorphology and immunohistochemistry in histiocytic and dendritic cell neoplasms: A retrospective observational study of three years in a referral laboratory in India

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Histiocytic and dendritic cell neoplasms (HDCN) are rare disorders of lymph node and soft tissue. These neoplasms include Histiocytic sarcoma (HS), langerhans cell histiocytosis (LCH), follicular dendritic cell sarcoma (FDCS), interdigitating cell sarcoma (IDCS), indeterminate cell sarcoma (INDCS), and fibroblastic reticular cell tumor (FRCT). These neoplasms are often misdiagnosed as carcinoma, neuroendocrine tumors and other Non-Hodgkin lymphomas. We sought to establish a correlation between the histomorphologic features and immunohistochemical results of these neoplasms and analyse the diagnostic pitfalls. This is a retrospective observational study including 17 cases of HDCN collected over a period of three years. Formalin fixed paraffin embedded tissue underwent routine haematoxylin and eosin (H and E) staining and microscopic examination. An extensive immunohistochemical panel was performed and included markers necessary for the diagnosis (CD68, NSE, CD1a, CD4, CD21, CD23, cyclinD1, CD45, Ki67, vimentin, S100, and PanCK) and markers important to exclude other differentials. Among 17 cases, LCH (8/17; 47%) was the most common subtype, and HS (7/17; 41.1%) was the second most common case, each of FDCS (1/17; 5.8%) and FRCT (1/17; 5.8%). The mean age of the patients was 36.6 years with male to female ratio of 2.4:1. LCH was seen in head and neck region predominantly including occipital bone, scalp, subgaleal periosteum, external auditory canal, supraclavicular lymph node, and cervical spine. The site of HS varied from colon (2/7), lymph node (1/7), lower limb (2/7) and spine (2/7). FDCS was diagnosed in a lymph node and FRCT presented as an abdominal mass. For LCH, on morphology, grooved nuclei with longitudinal cleft in the Langerhans cells seen in a background eosinophilic infiltrate were the most striking morphologic feature (8/8; 100%). CD1a, S100 and CD68 co-positivity was seen in all eight cases of LCH. Histiocytic sarcoma showed a consistent positivity for CD68 and CD4 in all the cases. FDCS showed characteristic histomorphologic features of tumor cells arranged in whorls, fascicles and storiform pattern with positivity of CD21 and CD23. The tumor cells in FRCT were arranged in a storiform pattern and showed positivity for vimentin and SMA. HDCNs are a rare group of hematologic disorders that have variable clinical presentations, rare sites and different prognoses. A careful morphologic evaluation and an extensive immunohistochemical work up are mandatory for their diagnoses. As a future standpoint, more cases need to be pooled, studied and evaluated for genetic studies to attain optimal treatment protocols for this rare group of neoplasms.

Biography

Shivani Sharma has completed her graduation from Maulana Azad Medical College, New Delhi in 2009, and completed her Diploma in Clinical Pathology from Indira Gandhi Medical College, Shimla, Himachal Pradesh in 2012. She studied Diploma in National Board from Medanta-The Medicity, Gurgaon, Haryana (2013-2015), also, cleared the first part of FRCPPath, Royal College of London in March 2015. She has been awarded the Shiv Ram Vidyawanti Kakkar Memorial Award, Gold Medal in ENT in 2007, and Gold Medal for the Best Student in Diploma in Clinical Pathology, in 2012 by Himachal Pradesh University. She has published more than 14 papers in various reputed journals.

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