Original Article

Spectrum Of Interesting Lesions In Lymph Node

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Abstract

Background: The lymph nodes in our body can get involved by many types of diseases, drawing attention to a localized lesion or a systemic illness. The findings obtained on their examination may be crucial in both diagnosis and prognosis.

Aim: To analyze various lymph node diseases on microscopic examination and correlate with clinical findings and ancillary investigations, wherever available.

Materials and Methods: Over a 6-year period, 15 cases with enlarged lymph nodes were selected, of which 14 were histopathological specimens and one was a cytological sample.

Results: Based on our findings, we diagnosed infective conditions, benign diseases, primary tumours and metastatic tumours.

Conclusion: Lymph node enlargement has to be looked into diligently, as its pathological evaluation has application in a wide range of disease processes.

INTRODUCTION

Lymph nodes are part of the human body's immune system.(1) But during our lives, lymph nodes get involved by a huge range of disease processes, such as infections, neoplasms and reactive processes to diseases in other organs.(2) The anatomic accessibility of the lymph nodes in our body, makes it the duty of every physician to examine them routinely and also that of every pathologist to analyze lymph nodes for the primary diagnosis and not to miss other significant findings therein.(3)

MATERIALS AND METHODS

This descriptive retrospective study was done at the Department of Pathology, Sri Muthukumaran Medical College, Hospital & Research Institute from January 2015 to January 2021. During our study period lymph node excision specimens were collected from the records and the interesting lesions were searched and analyzed. Relevant case history was taken and gross, cytological, histopathological and immunohistochemical evaluation wherever available were done.

RESULTS

Relevant case history, gross and microscopic findings are enumerated.

Case 1:

A 28 year-old female presented with fever and cervical lymphadenopathy for one month. An excision biopsy of the enlarged lymph node was examined microscopically.

Microscopy: The lymph showed focal areas of necrosis with few epithelioid histiocytes. Ziehl-Nielsen staining revealed many slender, beaded, 'acid-fast' bacilli, thus enabling us to make a diagnosis of Tuberculous Lymphadenopathy.[Fig1]

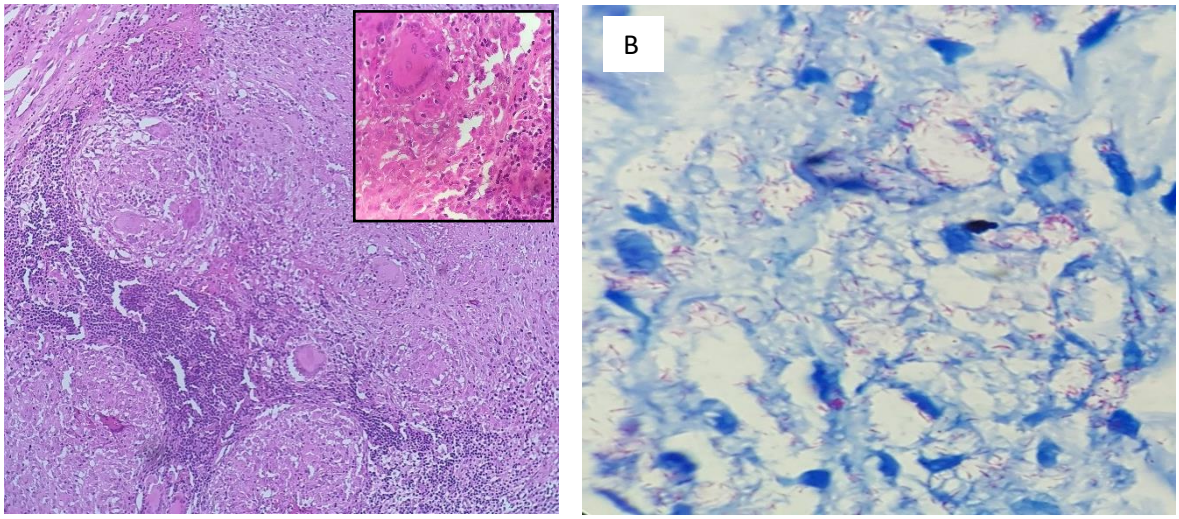


Fig 1: Tuberculous Lymphadenitis A -Histopathological examination of lymph node shows large areas of necrosis with granulomas in 10x. Inset shows a Langhan type of giant cell and epithelioid histiocytes in 40x. (H & E)B - Ziehl-Neelsen technique shows pink beaded acid-fast bacilli.

Case 2:
A cervical node was biopsied from a 23-year-old female.

Microscopy: The histomorphology revealed clusters of epithelioid histiocytes surrounding collections of neutrophils and apoptotic debris. There was no evidence of caseation necrosis. It was diagnosed as Cat-scratch Lymphadenitis.[Fig 2]

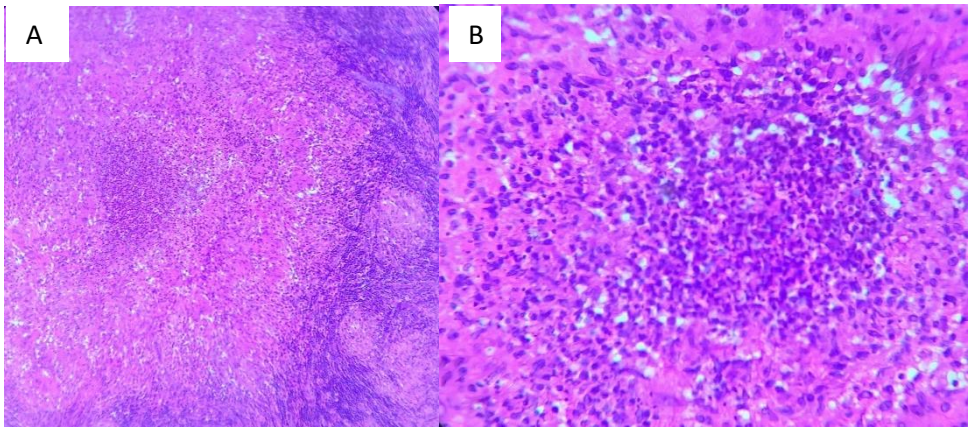


Fig 2: Cat-Scratch Disease: Section of lymph node showing collections of epithelioid histiocytes surrounding neutrophils and apoptotic debris (A -,4x, B - 40x)

Case 3:
A 17-year-old male presented with an enlarged cervical node. He had a vague past history of skin infection.

On gross examination, the lymph node was 3.5 cm wide and had a purulent cut-surface.

Microscopy: Lymph node shows many eosinophils with Granulomas withLanghan-type giant cells and foreign body type of giant cells were also present. Inside few giant cells, brownish yeast and hyphae could be seen. Fungal

stains (Periodic Acid Schiff and Gomori Methenamine Silver) revealed fungal hyphae and spores. It was diagnosed as Chromoblastomycosis.[Fig 3, 4]

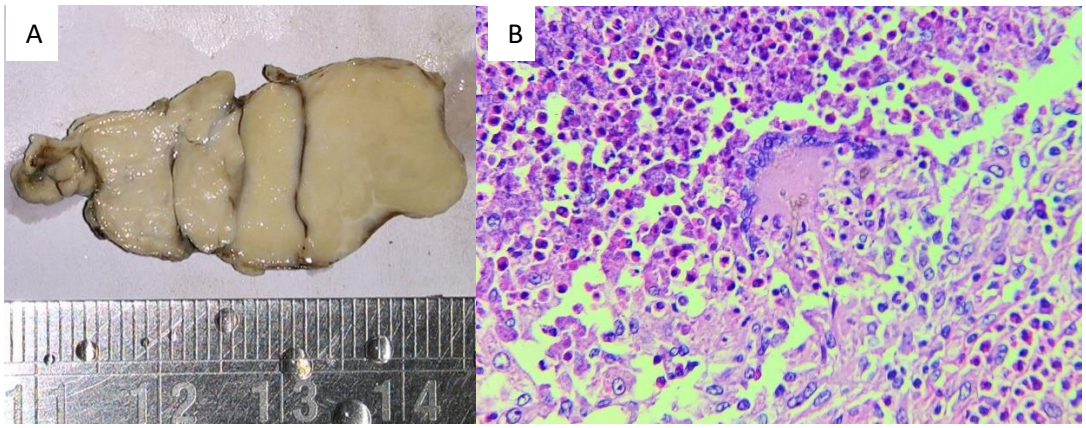


Fig 3: Chromoblastomycosis, Lymph Node: A – Gross appearance showed purulent cut surface.

B – Microscopy shows eosinophilic infiltrate, ill-defined granuloma and Langhan type of giant cell.

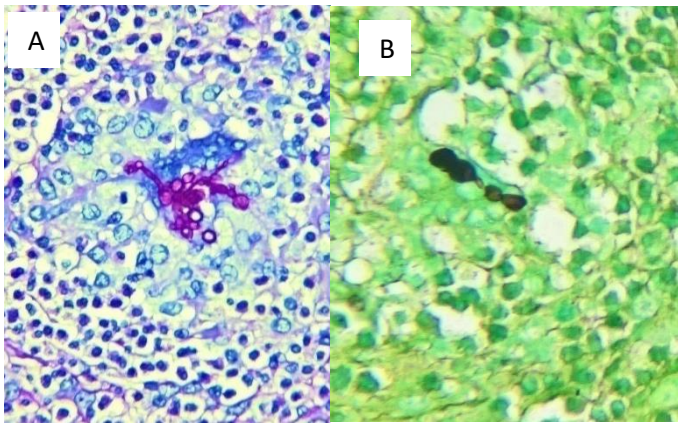


Fig 4: A – PAS stain reveals magenta-coloured fungal hyphae and spores. B – GMS stain showing silver deposits on the fungal hyphae.

Case4:

A 35 year-old, otherwise asymptomatic female had an enlarged cervical lymph node which was biopsied.

Microscopy: The histology revealed follicular hyperplasia with multiple small collections of epithelioid histiocytes and sinusoidal dilatation. It was diagnosed as Toxoplasma Lymphadenitis [Fig 5]

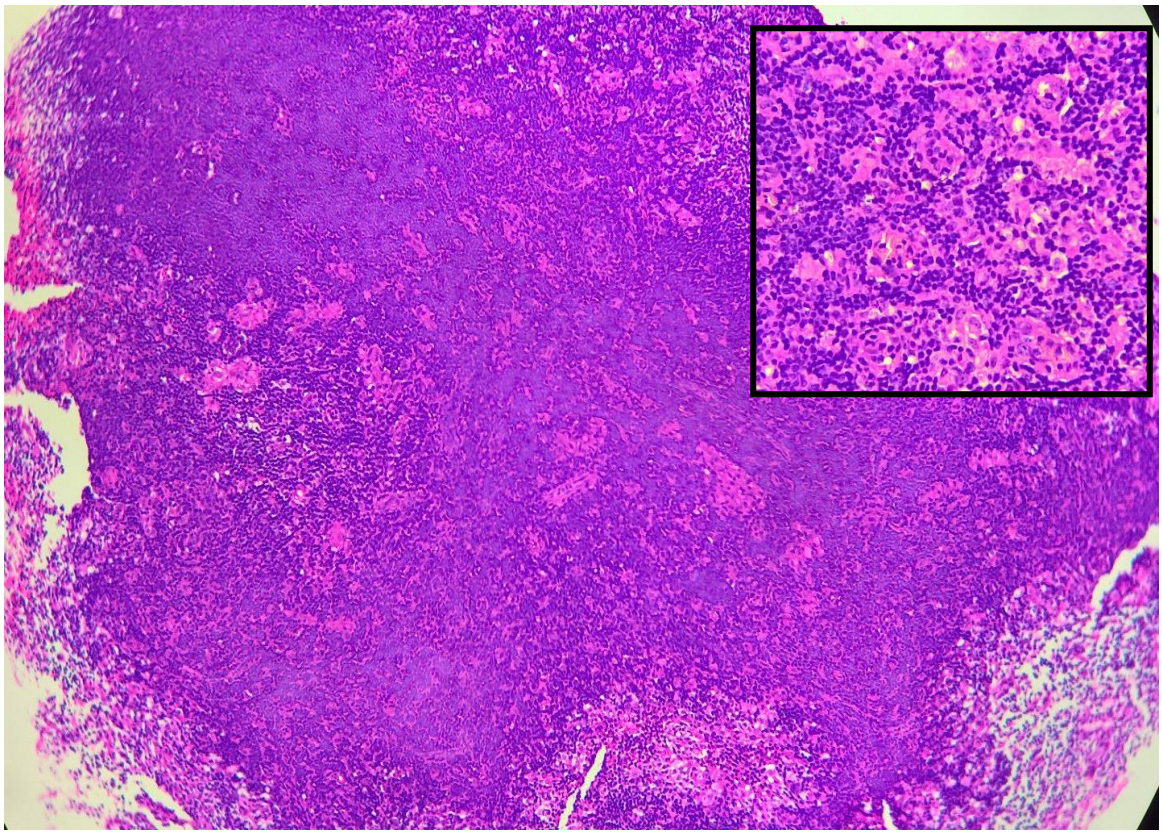


Fig 5: Toxoplasma Lymphadenitis: Microscopic examination of lymph node shows follicular hyperplasia and small epithelioid granulomas (H&E, 4x & Inset - 10x).

Case 5:

A 32-year-old female presented with fever and cervical lymphadenopathy for 2 weeks. A lymph node measuring 2.5 cm in greatest dimension was biopsied and sent for histopathological examination. Microscopy: The Lymph node architecture was retained, but a large area of eosinophilic necrosis was visualized that was bordered by numerous plasmacytoid histiocytes. They were accompanied by foamy histiocytes, lymphocytes and karyorrhectic debris. Based on these features, we diagnosed Kikuchi- Disease. [Fig 6]

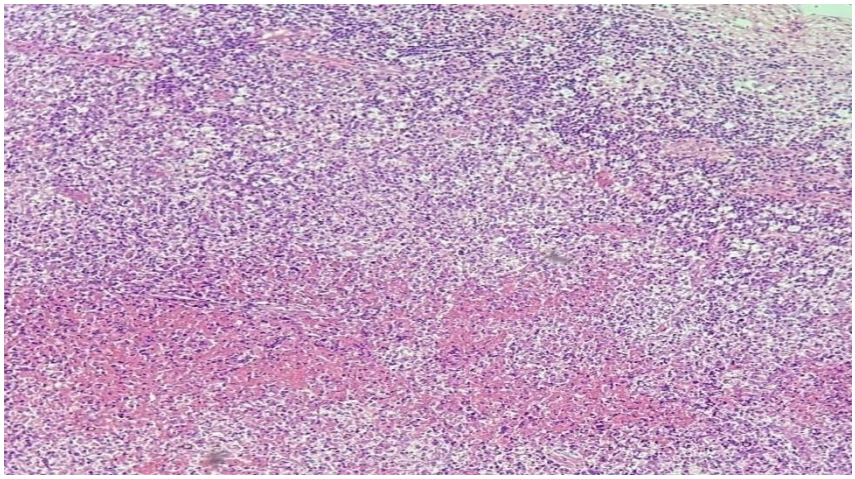


Fig 6: Kikuchi Lymphadenitis: Section of lymph node showing a large area of necrosis bordered by histiocytes (H&E, 4x).

Case 6:

A 39-year-old male presented with an enlarged cervical node, noticed 1 week earlier. His peripheral blood showed eosinophilia of 15%.

Microcopy: Lymph node showed folliculolysis with germinal center hyperplasia, interfollicular eosinophils, eosinophilic microabscesses and hyalinized blood vessels. With these findings, the patient was diagnosed to have Kimura Disease.[Fig 7]

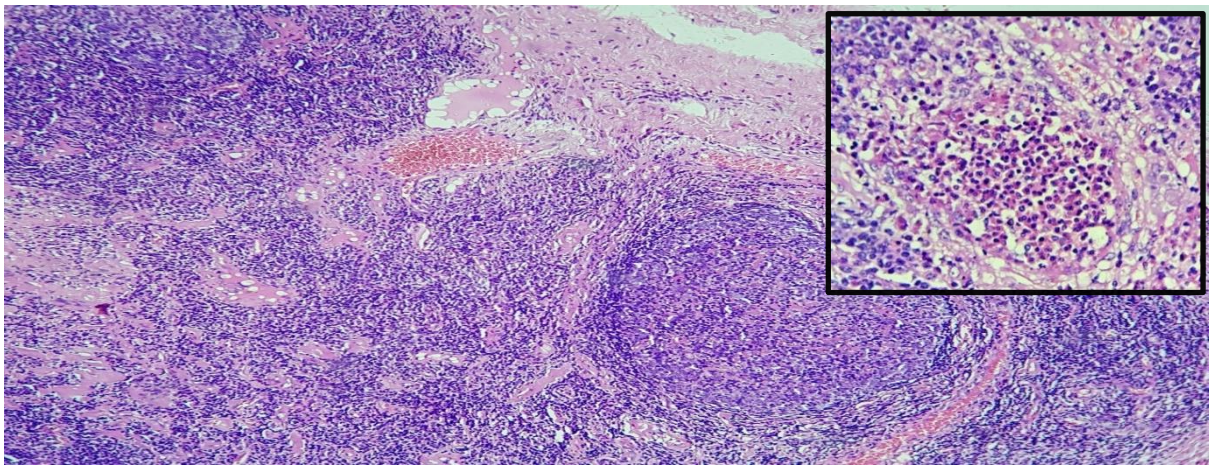


Fig 7: Kimura Disease: Lymph node histology (H & E, 10x) shows germinal center hyperplasia and hyalinized blood vessels with inset showing eosinophilic microabscess (inset, 40x).

Case 7:

A 14 year-old male presented with nasal obstruction. A nodular 5-cm nasal mass was excised. Microscopy: Histopathological examination revealed distorted lymph node architecture with few prominent germinal centres, few hyaline deposits with prominent endothelial cells in a background of lymphocytes. Hence a diagnosis of Castleman Disease, Hyaline Vascular Type was made wasmade. [Fig 8]

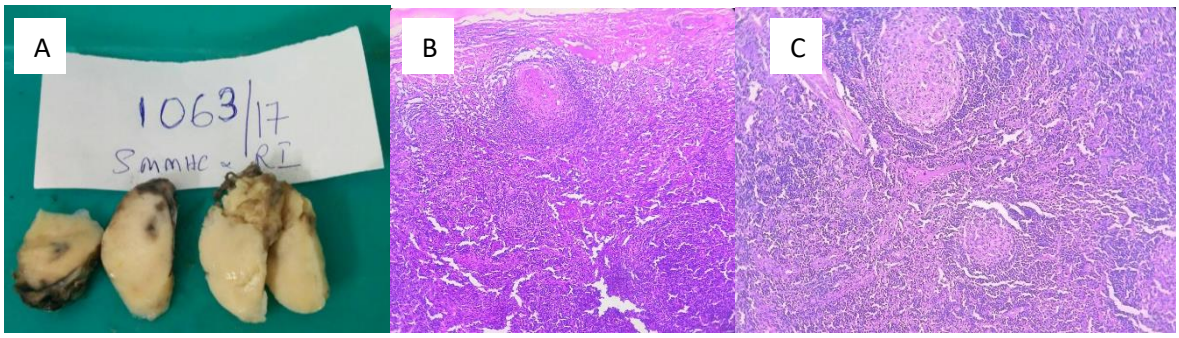


Fig 8: Castleman Disease: A – Gross specimen of excised nasal mass. B, C –Histology reveals few prominent germinal centres and prominent endothelial cells (H & E, 10x).

Case 8:

A previously healthy 37-year-old female presented with a history of pain in lower abdomen for 6 months, loss of weight and intermittent fever. Physical examination revealed pallor. She had swellings in both inguinal regions (6 cm on left and 3 cm and 2 cm on right). Hematological investigations showed microcytic hypochromic anaemia and elevated Erythrocyte Sedimentation Rate. The Fine Needle Aspiration Cytology revealed plenty of histiocytes showing emperipolesis (Fig 9).An incisional biopsy was subsequently performed, the tissue of which revealed clusters and sheets of mononucleate and binucleate plasma cells. [Fig 9]

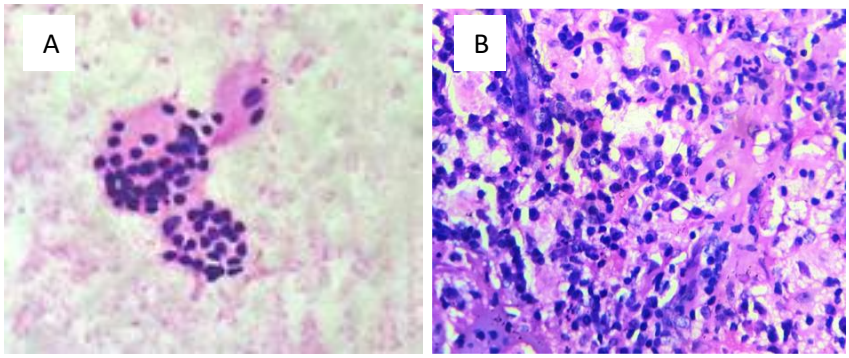


Fig 9: A – FNAC from inguinal node showing histiocytes with emperipolesis. B – Incisional biopsy showing plasmacytosis. (H & E, 40x).

Surgical excision of 3 inguinal masses (1 from left and 2 from right). Grossly, they had a firm, tan-white fleshy cut surface. After extensive sampling, histomorphology showed lymph node with effacement of architecture. There were large areas of fibrosis accompanied by sheets of plasma cells. The sinuses were expanded and filled with histiocytes exhibiting emperipolesis by intact lymphocytes. A diagnosis of Sinus Histiocytosis with Massive Lymphadenopathy was made.[Fig 10]

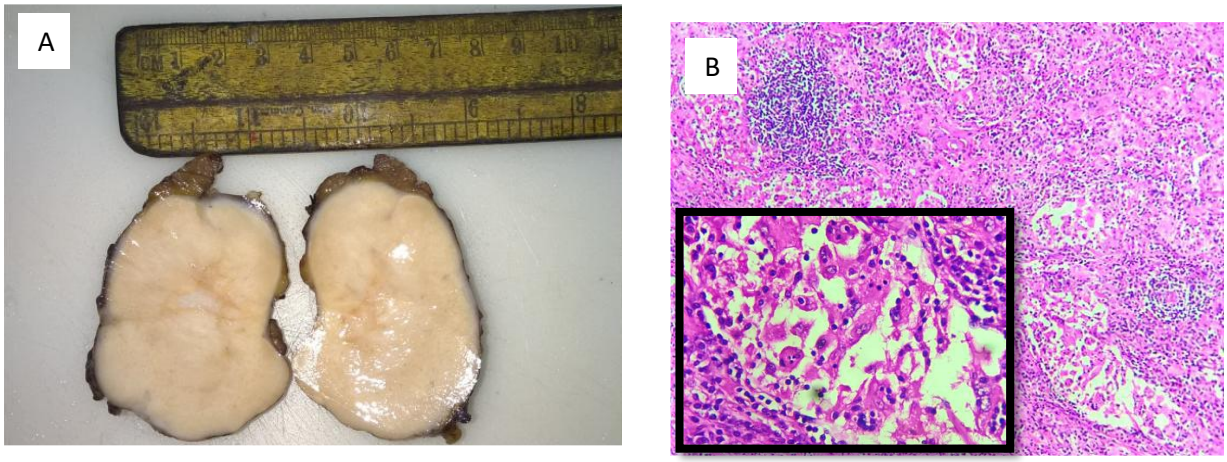


Fig. 10: A – Cut surface of large left inguinal lymph node was firm, tan and fleshy. B – Microscopic examination (H & E, 10x) revealed expanded sinuses, filled with histiocytes showing emperipolesis (inset40x).

In order to confirm the diagnosis, immunohistochemistry was done. The histiocytes were positive for histiocytic markers S100 and CD68 and negative for CD1a, a marker for Langerhan cells. [Fig 11]

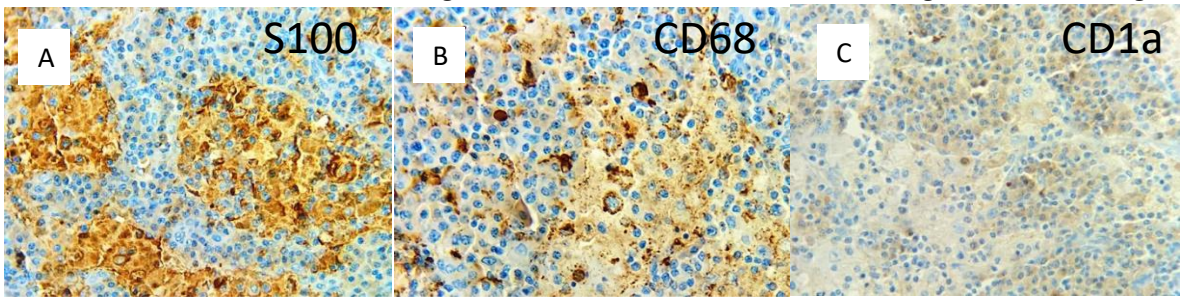


Fig. 11: Histiocytes showing immunopositivity for S100 (A) and CD68 (B) and negativity for CD1a (C)

Case 9:

A 59-year old male presented with a solitary submandibular swelling. A 3-cm lymph node was excised and sent for histopathology. It had a grey-white and homogeneous cut surface, grossly. Microscopy revealed lymph node with effaced architecture showing numerous large mononucleate and binucleate Reed-Sternberg cells with

prominent nucleoli in a background of lymphocytes, plasma cells and eosinophils. Thus the diagnosis was given as Hodgkin's Lymphoma – Mixed Cellularity type.[Fig 12]

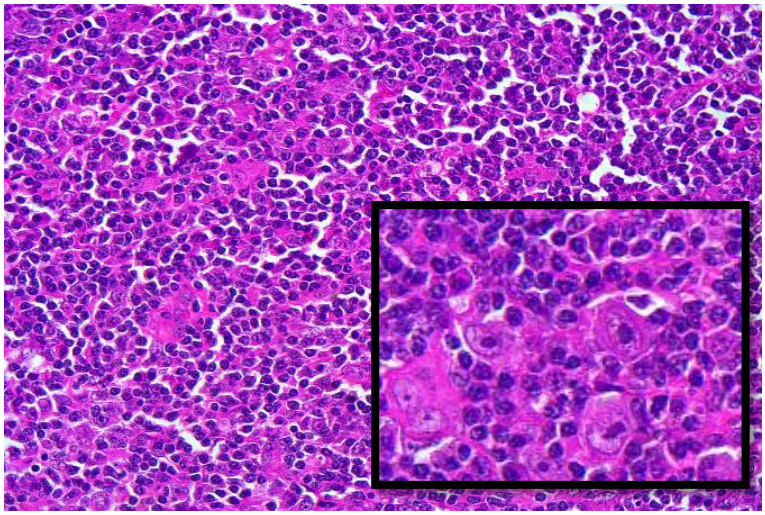


Fig. 12: Hodgkin's Lymphoma – Lymph node with effaced architecture, showing Reed-Sternberg cells (inset) in a background of lymphocytes, plasma cells and eosinophils (H & E. 40x).

Case 10:

A 56 year-old male presented with cervical lymphadenopathy. A 3-cm lymph node was excised and sent for histopathology.

Grossly its cut surface was white with few focal grey-black areas.

Microscopically, there was loss of lymph node architecture and proliferation of atypical lymphoid cells. There was a mixed population of small and large cells with indistinct nucleoli and fine chromatin. Few mitoses were seen. Histiocytes were present. A diagnosis of Non-Hodgkin Lymphoma was made.[Fig 13]

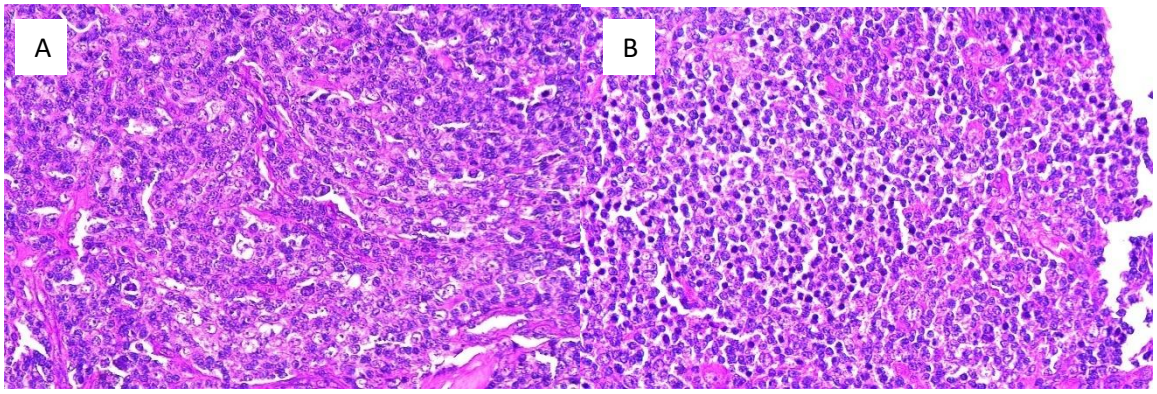


Fig. 13: Non-Hodgkin Lymphoma of lymph node: A & B - Lymph node with effaced architecture showing proliferation of atypical lymphoid cells.

Case 11:

A 73 year-old male presented with generalized lymphadenopathy involving multiple groups of lymph nodes. A cervical lymph node was biopsied.

Microscopy showed a pleomorphic tumour which was morphologically not of an easily-recognizable pattern. Thus immunohistochemistry was necessary to proceed.[Fig 14]

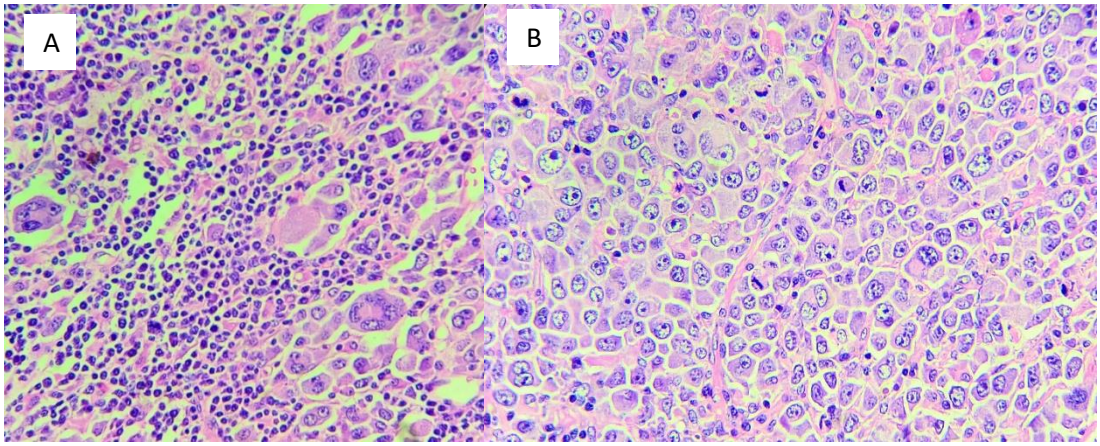
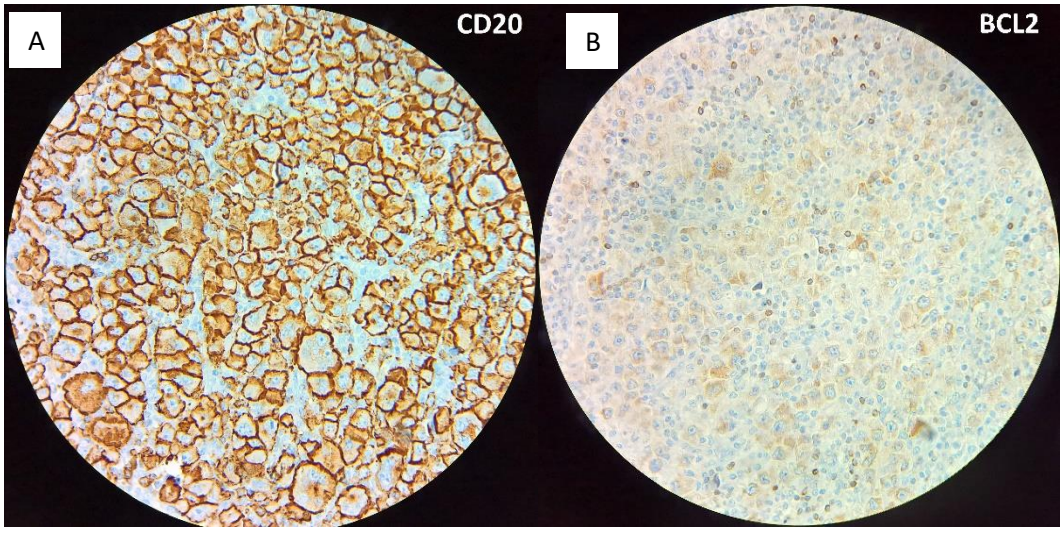


Fig. 14: A & B - Lymph node showing pleomorphic tumour (H & E, 40x)

Most of the cells were CD20 positive. The cells were also BCL2 positive and had a high Ki67 labelling index, thus proving the Diffuse Large B-Cell Lymphoma. CD30 was also positive, but Hodgkin's lymphoma was ruled out histologically and so was the other immunohistochemical differential, Anaplastic Large Cell Lymphoma (using a negative ALK1). So this was diagnosed as CD30-positive Diffuse Large B Cell Lymphoma. [Fig 15]



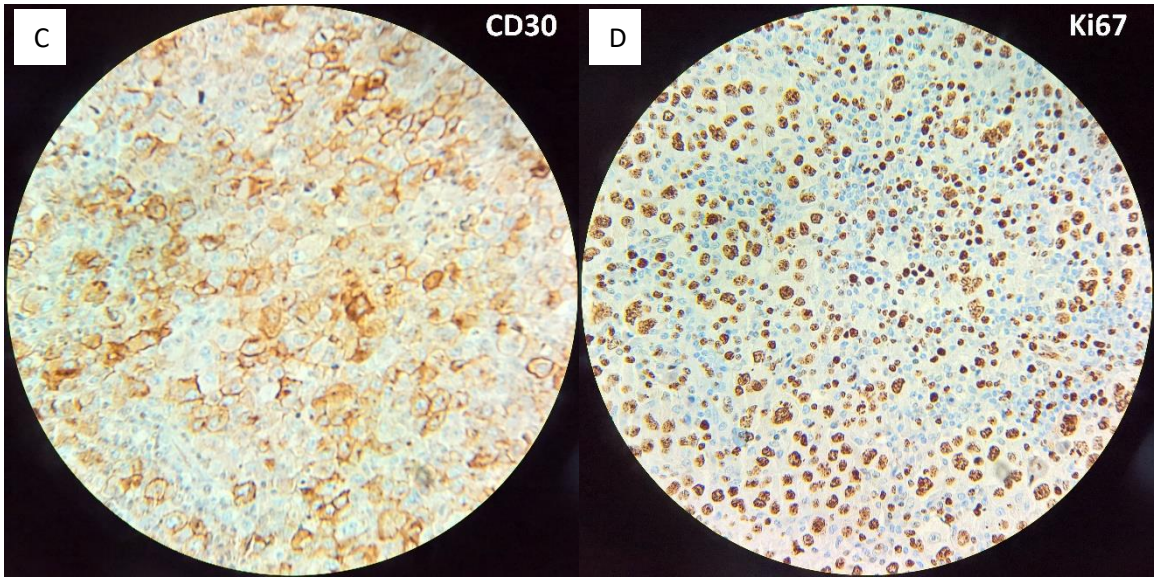


Fig. 15: CD30-positive Diffuse Large B Cell Lymphoma – A-D – Immunohistochemistry showing positivity for CD20, BCL2 & CD30. Ki67-labelling index is high.

Case 12:

An 81 year-old male presented with generalized lymphadenopathy and bilateral testicular enlargement. Excision biopsy of axillary node and trucut biopsy of testis were performed.

Microcopy: The lymph node showed effacement of architecture and a diffuse infiltrate of large cells with vesicular nuclei and prominent nucleoli. Cytoplasmic staining of BCL2 in all the atypical cells proved the diagnosis of Diffuse Large B Cell Lymphoma. The testicular biopsy revealed an identical atypical lymphoid infiltrate.[Fig 16]

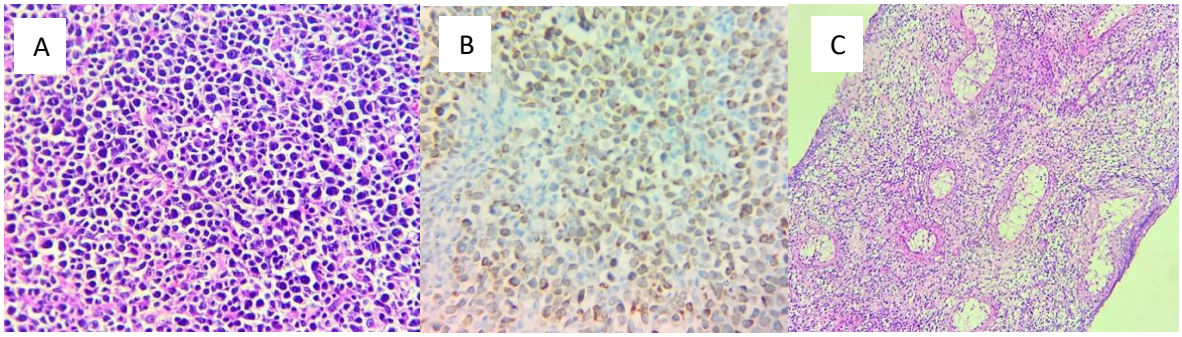


Fig. 16: Diffuse Large B Cell Lymphoma: Axillary node showing infiltrate of atypical lymphoid cells (A, 40x H&E), which are immunopositive for BCL2 (B). The same cells are visualized in testicular biopsy (C, 10x H&E).

Case 13:

A 53 year-old female underwent a modified radical mastectomy after being diagnosed with Lobular Carcinoma of the breast. One of the lymph nodes from the accompanying axillary dissection, showed a metastatic deposit of the tumour.[Fig 17]

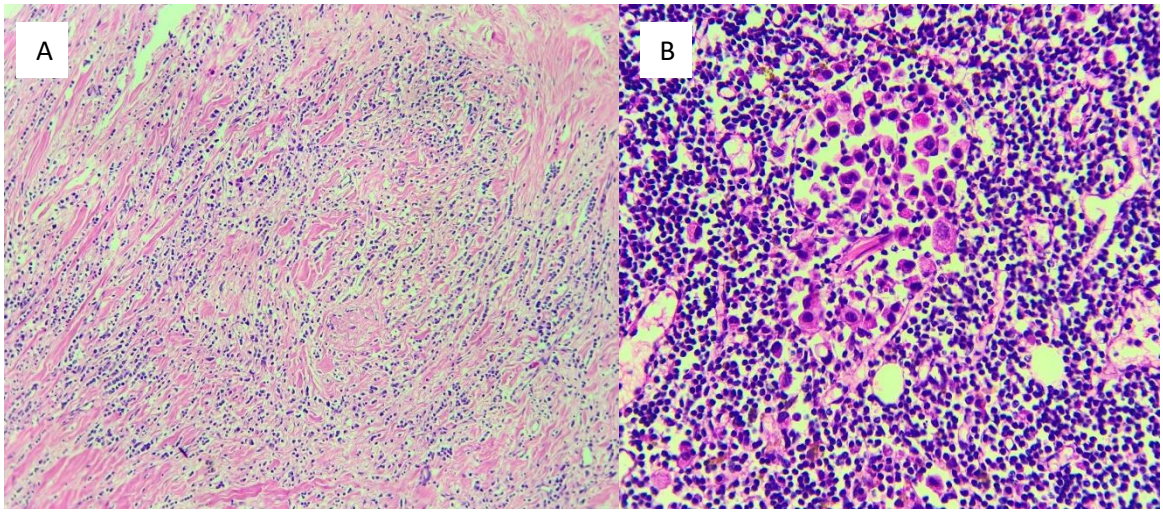


Fig. 17: Metastatic Invasive Lobular Carcinoma of Breast in Axillary Lymph Node: A – Sections from the primary tumour in breast showing tumour cells arranged predominantly in Indian file pattern (H & E, 10x). B – Section from axillary lymph node showing a cluster of tumour cells (H & E, 40x).

Case 14:
A 60 year-old female, who was diagnosed with Serous Carcinoma of the Uterine Corpus, underwent a Hysterectomy. The uterine wall showed foci of lymphovascular tumour emboli. On studying the pelvic lymph nodes that were also excised, to stage the disease, a metastatic deposit was found in one lymph node.[Fig 18]

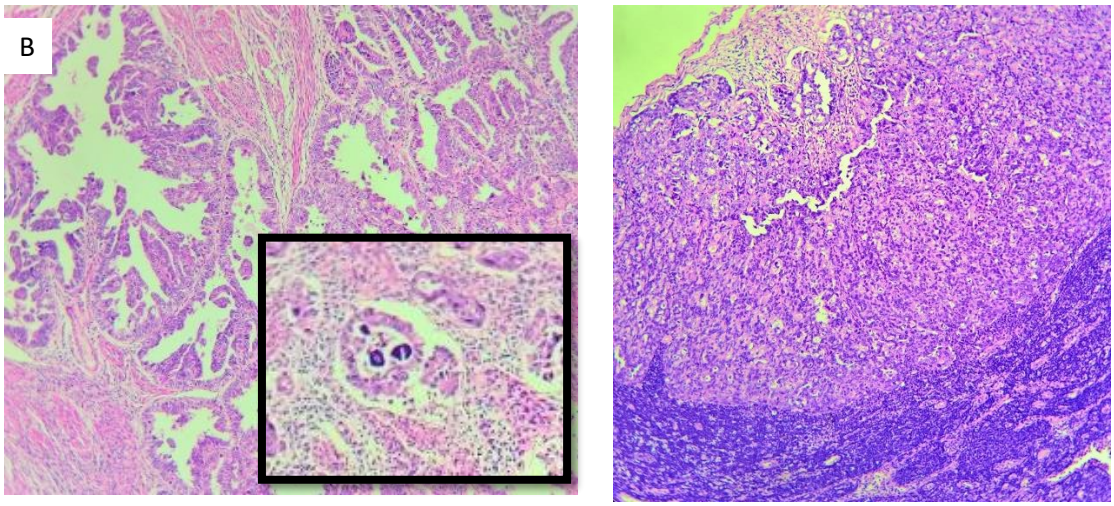


Fig. 18: Metastatic Serous Papillary Carcinoma of Uterus – A – Primary tumour arising from endometrium and infiltrating myometrium with lymphovascular tumour embolus in inset. B – Pelvic lymph node showing metastatic tumour deposit. (H & E, 10x).

Case 15:

A 65 year-old male who had a non-healing ulcer in foot, presented with an inguinal mass. Clinically, the mass was identified as an inguinal lymph node of the vertical group. Fine Needle Aspiration was performed. The cytological smear thus obtained revealed melanoma cells with variable amounts of brownish to black pigment in cytoplasm and large nuclei with prominent nucleoli, in a background of lymphocytes. The diagnosis of metastatic melanoma was readily made. [Fig 19]

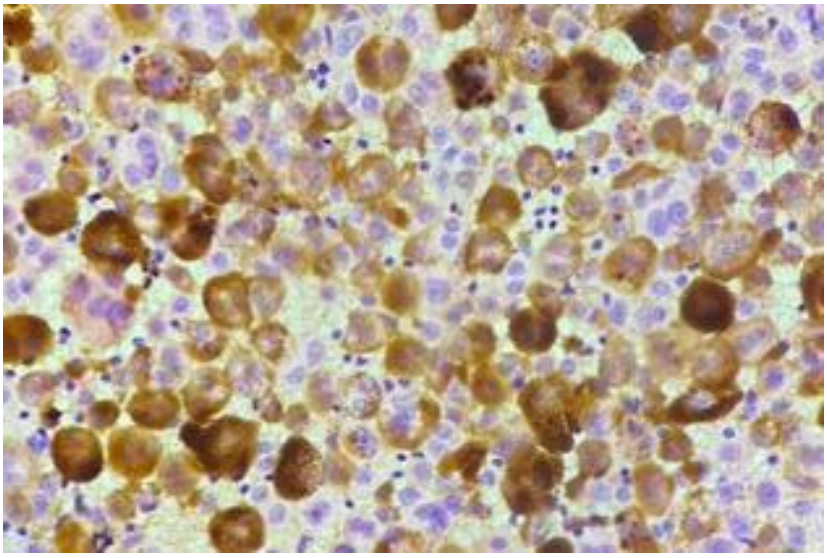


Fig. 19: Metastatic Malignant Melanoma, Inguinal Lymph node. Fine Needle Aspiration Cytology smear from inguinal lymph node showing numerous melanoma cells in a background of lymphocytes (H & E, 40x).

Discussion:

Lymph node tuberculosis still is common in developed and developing countries and being the most common form of extrapulmonary tuberculosis, it can mimic many other diseases. The causative bacilli can be visualized on careful microscopic examination of slides stained by Ziehl-Nielsen method [(3)].

Cat-scratch Lymphadenitis is a part of the self-limiting bacterial infection by Bartonella henselae. The upper extremities are the most common site, which is followed by cervical and facial regions with involvement of the draining lymph nodes. Collections of neutrophils in the subcapsular sinus, eventually spread across cortex into medulla as small microabscesses, bordered by epithelioid histiocytes. Warthin Starry silver staining helps to visualize the causative bacteria [(3)].

Chromoblastomycosis is a worldwide fungal infection with a higher incidence in the tropics and sub-tropics. It presents characteristically with various manifestations in skin and subcutaneous tissues and is known to spread to the lymph nodes via lymphatics. True abscesses and granulomas may develop around the dividing yeast cells which due to their melanin pigment are readily visualized, even without special stains [(4)].

Toxoplasmosis is an infection by the protozoan Toxoplasma gondii, which is common in warm and humid climates. Cats are the definitive host and humans serve as intermediate host through ingestion of oocysts shed in cat faeces. The histopathological triad of florid reactive follicular hyperplasia, clusters of epithelioid histiocytes, and focal sinusoidal distention by monocytoid B cells has been considered to be diagnostic of toxoplasmic lymphadenitis, but serological tests are also necessary to confirm the diagnosis. The other manifestations of this infection may be as systemic disease in immunocompromised, or fetal toxoplasmosis through transplacental infection[(5)].

The aetiology of Kikuchi Lymphadenopathy, a subacute necrotizing lymphadenopathy remains unknown. Commoner in Asia, typically is seen in the cervical lymph nodes of young females. Spontaneous resolution of the lymphadenopathy is common in few weeks, but rarely recurrences and involvement of other sites have occurred with few fatalities.[(3)]

Kimura Disease is a chronic inflammatory disease of deep subcutaneous tissue with lymph node involvement. It also is more common in Asians, however young males are involved. It may simulate neoplasia, however the course is benign. Radiotherapy is the preferred treatment [(3)]

Castleman Disease is a histological diagnosis given to diseases with differing clinical presentations. Immune dysfunction and HHV-8 infection have been implied as causes. It is common in lymph nodes and can presents

extranodally in mediastinum.[3]Although Hyaline Vascular Type of Castleman Lymphadenopathy affects cervical and mediastinal lymph nodes more commonly in young, there have been reports of it occurring in Axillary lymph nodes too [7].

Sinus Histiocytosis with Massive Lymphadenopathy, also known as Rosai-Dorfman disease commonly causes massive painless bilateral lymphadenopathy in the neck and can be associated with fever, leukocytosis, raised ESR and polyclonal hypergammaglobulinemia[2]. Extranodal disease has been reported in skin of females of 3rd and 4th decades, but inguinal node presentation is extremely rare [9].

Hodgkin Lymphoma, is known to peak bimodally in the young and the old age-groups. It commonly arises in the lymph node groups above the diaphragm and left untreated, can spread to other groups and organs [2].

Immunophenotyping is essential to categorize lymphoproliferative disorders into B or T cell lineage and also to subtype them [2].

Diffuse Large B Cell lymphoma is a highly aggressive type of Non-Hodgkin Lymphoma that arises either de novo from B lymphocytes in lymphoid tissues, or as a transformation of a low-grade lymphoma (Richter Syndrome). CD30 expression in Diffuse Large B Cell Lymphoma identifies a subset with more favourable prognosis and specific therapy [8].

Malignant Lymphoma is the most common testicular neoplasm of the elderly and can both grossly and microscopically mimic Seminoma or SpermatocyticTumour[2].

Metastatic Lobular Carcinoma in the lymph node can present as single dyscohesive cells with small round nuclei containing inconspicuous nucleoli. Ductal pattern and desmoplasia may not be seen, thus making it more difficult to be identified [1].

Of all the variants of carcinoma of the Endometrium, the serous type is specially known to spread via lymphatic vessels [2].

Fine Needle Aspiration Cytology is effective in detecting Metastatic Melanoma in lymph nodes, due to its high sensitivity and specificity. [10]

Conclusion:

Lymphadenopathy is one of frequently encountered clinical problem in day to day practice. Also, lymph node evaluation forms an integral part of patient management. Our study highlights various rare causes of lymph node enlargement of various sites. Histopathology and cytology along with aid of Immunohistochemistry gives accurate and confirmatory diagnosis in these situations.

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