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Aureate and Euphuistic-Florid Follicular Hyperplasia Lymph Node

Anubha Bajaj*

Professor of Hematology, Faculty of Medicine, Alexandria University, Egypt

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Corresponding author: Anubha Bajaj, Histopathologist in A B Diagnostics, New Delhi, India

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Abbreviations: FDCs: Follicular Dendritic Cells; GCS: Germinal Centres; TFH: T Helper Cells; HIV: Human Immune Deficiency Virus; GC: Germinal Centre; PCR: Polymerase Chain Reaction

Introduction

Florid follicular hyperplasia expounds quantifiably enhanced primary and secondary lymphoid follicles of inconstant outline and magnitude distantly disseminated within the lymph node parenchyma. Not with standing, florid lesions delineate follicles extending into subjacent medulla. Hyperplastic germinal centres (GCs) are constituted of an admixture of centroblasts and centrocytes with prominent mitotic activity, reactive T lymphocytes, follicular dendritic cells (FDCs) and tingible body macrophages.

A population of B lymphocytes may concur with aforesaid cellular population. Centroblasts are preponderantly confined to dark zones of the germinal centre and are impregnated with enlarged, vesicular nuclei with up to three peripheral nucleoli. Centrocytes are predominantly confined to light zone of germinal centre and configure as miniature cells or cells of intermediate cellular magnitude pervaded with cleaved, hyperchromatic nuclei and minimal to absent nucleoli. Centroblasts and centrocytes appear immune reactive to BCL6+, CD10+, LMO2+, HGAL / GCET+ or OCT2+ [1,2]. T lymphocytes configure as miniature, spherical cells immune reactive to CD3+ and BCL2+.

Besides, a subset of T helper cells (TFH) may expound an immune reactive panel of polarized CD4+, PD-1 / CD279+, BCL6+, CD10+, CXCL13+ or ICOS+ [1,2]. Follicular dendritic cells (FDCs) configure a minimal component of ~1%. The cells are pervaded with dual, square nuclei with vesicular chromatin (kissing cells) articulating within adjacent cells. A miniature nucleolus may de discernible. Cytoplasmic processes appear elongated. The cells appear immune reactive to CD21+, CD23+ or CD35+ [1,2]. Tingible body macrophages are permeated with abundant, pale cytoplasm and elliptical or twisted, vesicular nuclei. A predominant population of cells delineating karyorrhectic nuclei may induce a 'starry sky' configuration. Tingible body macrophages appear immune reactive to CD4+, CD68+ or CD163+ [2,3]. Mantle zone appears well expounded [2,3].

Florid follicular hyperplasia necessitates distinction from germinal centres which are preponderantly comprised of small lymphocytes and cells demonstrating IgD+ configuration. Cellular extension beyond the capsule into perinodal soft tissue is minimal to absent [2,3]. Site of implicated lymph node appears indicative of concordant disease process commonly enunciated as cervical lymph nodes enlarged in infectious mononucleosis posterior cervical lymph nodes involved in toxoplasmosis ~parotid, submaxillary or epitrochlear lymph nodes are enlarged in human immune deficiency virus (HIV) infection ~cervical and axillary lymph nodes appear enlarged in conditions as cat scratch disease or dermatopathic lymphadenitis. ~inguinal lymph nodes are implicated in diverse sexually transmitted diseases [3,4] (Figures 1& 2) (Table 1).

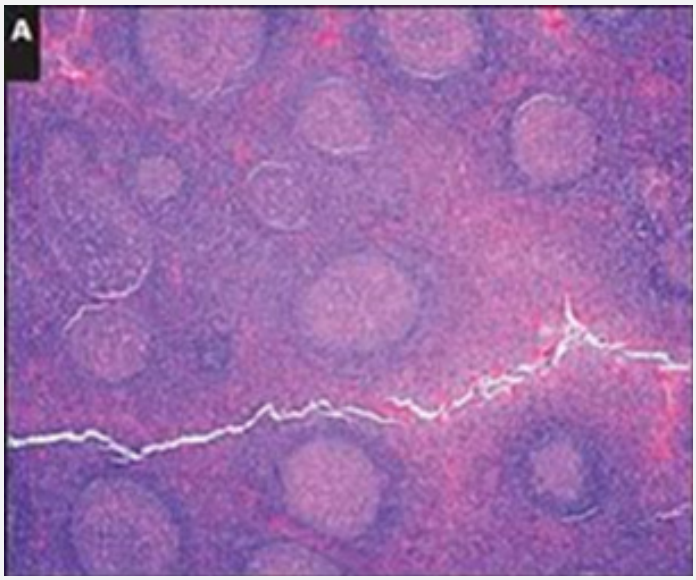

Figure 1: Florid follicular hyperplasia delineating lymphoid follicles comprised of centrocytes, centroblasts, reactive T cells, tingible body macrophages and few follicular dendritic cells. The follicles appear to extend to subjacent medulla [9].

Table 1: Distinction between florid follicular hyperplasia and B cell lymphomas with follicular formation [4,5].

Morphological Features	Florid follicular hyperplasia	Follicular lymphoma	Marginal zone lymphoma	Mantle cell lymphoma, mantle zone pattern
Follicles	Enlarged, with prominent GCs and distinct mantle zones	Follicles of variable size surrounded by faint mantle zones	Nodules with remnants of GCs surrounded by monocytoid cells	Thickened mantle zones
Density	Low, widely spaced	Back-to-back	Variable, may be confluent	Variable
Size	Uneven	Uniform	Variable	Uniform
Borders of GC	Sharp, well defined	Faint, crack artefact	Blurred	Sharp, well defined
Distribution	Cortical predominance, florid lesions extend to medulla	Cortex and medulla	Cortex and medulla	Even distribution throughout cortex and medulla
Extension to perinodal fat	Absent or unusual	Often present	Often present	Uncommon
Mantle zone	Present, well developed	Attenuated to absent	Generally absent	Expanded in mantle zone pattern
Marginal zone	Can be hyperplastic	Absent	Expanded, may coalesce	Absent
Germinal centre cells			Colonized by monocytoid cells	Absent
Tingible body macrophages	Commonly present	Decreased or absent	Decreased or absent	Variable
Polarization	Present	Absent	Absent	Variable
Cytological features	Centroblasts, centrocytes and macrophages	Centroblasts and centrocytes in varying proportions	Monocytoid and plasmacytoid, scattered large cells	Small and intermediate centrocyte-like cells, few large cells
Immuno-architecture				
BCL2	Negative in GCs	Positive in germinal centres of FL grades 1 to 2, 50% in FL grade 3	Positive in neoplastic cells, GC remnants are negative	Positive in mantle zones
BCL6, CD10	Positive, restricted to GCs	Positive in GCs and interfollicular areas	Negative, GC remnants positive	Positive, restricted to GCs
Ki67	High proliferation rate, polarized in GCs	Low, non-polarized	Low, non-polarized	Variable in mantle zones
CD21, CD23, CD35	FDC meshwork preserved	FDC meshwork preserved	Distorted FDC meshwork	FDC meshwork preserved

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Common positive markers	BCL6, LMO2, OCT2, HGAL	CD10, BCL2, BCL6, LMO2	CD43, MNDA, CD5-/+	Cyclin D1, SOX11, CD5
Common negative markers	CD3, BCL2	CD5, cyclin D1	CD10, cyclin D1, SOX11	CD10-, CD23- in mantle zones
Flow cytometry	Polytypic	Monotypic surface Ig, CD10+	Monotypic surface Ig, CD10-, CD5- or weak	Monotypic surface Ig, CD5+

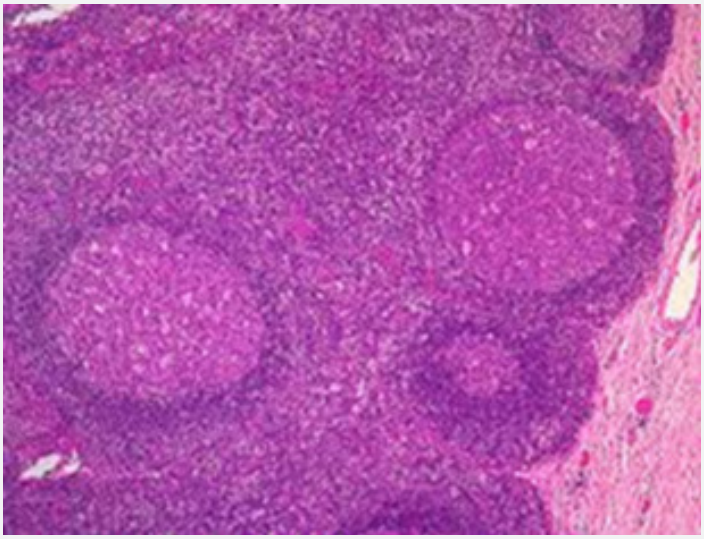

Figure 2: Florid follicular hyperplasia expressing lymphoid follicles comprised of centroblasta, centrocytes, reactive T cells, tingible body macrophages and few follicular dendritic cells. The follicles appear to extend into subjacent medulla [10].

Florid follicular hyperplasia demonstrates lymphoid follicles which expound B cell antigens [6,7]. Primary follicles are comprised of miniature lymphocytes which appear immune reactive to BCL2+ and immune non-reactive to BCL6- and CD10-. Ki67 proliferative index is < 10% [6,7]. Secondary follicles delineate germinal centres immune non-reactive to BCL2- [6,7]. T follicular helper (TFH) cells are constituted of a subset of T cells confined to the germinal centres. Aforesaid cells may be quantifiably enhanced and are immune reactive to BCL2+. The condition may simulate follicular lymphoma. Ki67 proliferative index may be elevated.

Cellular population may display polarization with centroblast rich areas demonstrating as a dark zone and centrocyte rich areas configuring as a pale zone. Cells immune reactive to BCL6+ and CD10+ appear confined to germinal center (GC). Aforesaid cellular population is minimal within the inter-follicular areas [7,8]. Flow cytometry enunciates a population of polytypic B cells which display a configuration of CD10+ with absent T cell antigens. Polymerase chain reaction (PCR) expounds polyclonal immunoglobulin demonstrating heavy chain genetic rearrangements. However, chromosomal translocation t(14;18) (q32; q21) or IGH: BCL2 genomic fusion appears absent [7,8].

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