Immunohistochemical staining

The majority of the cases were depleted. No sideroblasts were identified. The patient was treated with corticosteroid and showed marked improvement and was discharged after 3 days.

Results (if a Case Study enter NA): NA

Conclusion: Hemophagocytic lymphohistiocytosis can be a critical sequela of COVID-19 infection. Suggested mechanisms include impaired/delayed T-cell response and elevated levels of several inflammatory cytokines. Clinical suspicion is important in the diagnosis of these cases. Further study of this correlation is needed as we explore clinical sequelae of COVID-19 infection.

A rare case of post COVID-19 hemophagocytic lymphohistiocytosis in a pediatric patient

A. Rjoop, M. Barukha, O. Al Rusani; Pathology, Jordan University for Science and Technology, Irbid, JORDAN; Pathology, Emory University, Atlanta, Georgia, UNITED STATES

Introduction/Objective: Hemophagocytic Syndromes are a cluster of disorders related to cytotoxic dysfunction of T/NK-cells and are mainly subdivided into Primary (familial) and Secondary (acquired) forms, with the latter usually linked to patients with viral infections; including EBV, CMV among many others. A myriad of other causes have been associated with hemophagocytic lymphohistiocytosis (HLH), most notably systemic inflammatory conditions; especially Juvenile Rheumatoid Arthritis and hematolymphoid malignancies particularly T/NK-cell lymphomas.

Methods/Case Report: A previously healthy 7-year-old boy, presented to the ER with fever and a skin rash over both lower limbs of 1 week duration. Two weeks prior he was tested for COVID-19 and was found to be positive. Physical examination further revealed slightly palpable liver and spleen. CBC was done and exhibited pancytopenia, further testing showed elevated LDH, hyperferritinemia and hypertriglyceridemia. However, serological testing for rheumatological conditions was unremarkable. Imaging studies were done and were noncontributory. Subsequently, a bone marrow aspirate and biopsy were done. The bone marrow aspirate showed a few histiocytes engulfing red blood cells and nuclear debris (hemophagocytic cells), complete trilineage maturation and normal M:E ratio of 3:1. Trephine biopsy was hypocellular for age and estimated at about 70%, composed of myeloid and erythroid precursors with various degrees of maturation. Megakaryocytes were adequate in number and showed normal morphology. Extensive histiocytic infiltration was highlighted by CD68 immunostain and focal phagocytosis were identified. CD34 highlighted <5% blasts, PAS special stain showed no fungal elements and no fibrosis was evident by Reticulin special stain. The background was devoid of lymphoid aggregates or granulomas. Stainable iron stores

were depleted. No sideroblasts were identified. The patient was treated with corticosteroid and showed marked improvement and was discharged after 3 days.

Results (if a Case Study enter NA): NA

Conclusion: Hemophagocytic lymphohistiocytosis can be a critical sequela of COVID-19 infection. Suggested mechanisms include impaired/delayed T-cell response and elevated levels of several inflammatory cytokines. Clinical suspicion is important in the diagnosis of these cases. Further study of this correlation is needed as we explore clinical sequelae of COVID-19 infection.

Immunohistochemical Characterization of H3K4Me3 in Reactive Lymph Nodes and Follicular Lymphoma

G. Xu, K. Dresser, J. Bledsoe; Pathology, University of Massachusetts, Worcester, Massachusetts, UNITED STATES; Pathology, Boston Children’s Hospital, Boston, Massachusetts, UNITED STATES

Introduction/Objective: Genes involved in histone methylation are frequently mutated in non-Hodgkin's lymphomas. For instance, frequent mutations in genes encoding histone methyltransferases MLL2 and EZH2 are present in diffuse large B cell lymphoma (DLBCL) and follicular lymphoma (FL). The aim of this study was to characterize the immunohistochemical expression of H3K4Me3 in benign/reactive lymph node (LN) with comparison to follicular lymphoma (FL).

Methods/Case Report: Immunohistochemical staining with an anti-H3K4Me3 antibody was performed on FFPE whole slide section from patients with benign/reactive LNs (n=21), low grade (grade 1-2) FL (n=21). H3K4Me3 reactivity was scored for staining intensity and percentage of lymphocytes showing reactivity.

Results (if a Case Study enter NA): The majority of the reactive LN sections (15 out of 21 cases) showed a distinct distribution of H3K4Me3 staining, with the majority of cells in the mantle zone and the interfollicular zones showing moderate-strong staining, whereas reactive germinal centers (GCs) showed significantly decreased or close to negative staining. Neoplastic follicles in all the FL cases contained positive cells with significantly stronger staining compared to that in the germinal centers in benign lymph nodes. The interfollicular zones, while diminished in FL due to expanded neoplastic follicles, showed retained H3K4Me3 staining. The difference in staining intensity between follicles and mantle/interfollicular zones become indistinct in FL.

Conclusion: H3K4Me3 expression in benign/reactive LNs is characterized by positive expression in lymphocytes in interfollicular and mantle zones and significantly decreased in GCs. However, the expression pattern is different in FL, which showed significantly increased expression in the follicles compared to that in reactive GCs.