Introduction

The spectrum of cutaneous CD30 (+) lymphoproliferative disorders encompasses lymphomatoid papulosis (LyP), borderline cases, systemic anaplastic large cell lymphoma (PCALCL) with cutaneous involvement and primary cutaneous anaplastic large cell lymphoma (PCALCL). LyP and PCALCL represent the two ends of the spectrum of CD30+ cutaneous lymphoproliferative disorders and usually associated with a favorable prognosis that has been attributed to the expression of CD30. LyP is defined as a chronic, recurrent self-healing papulonodular eruption characterized by waxing and waning. Histopathologically, it can be classified into 3 subtypes, Type A, Type B and Type C (PCALCL-like), depending on the presence and proportion of atypical CD30+ atypical lymphocytes. PCALCL lies at the malignant end of the spectrum of CD30+ lymphoproliferative disorders and is thought to differ from the systemic form of ALCL based on its clinical features, site of involvement and the absence of ALK-1 expression (IL-6). It is important to recognize that some cases of PCALCL and LyP do not have clear-cut boundaries between them and the term "lymphomatoid papulosis (LyP) / ALCL" have been used by some experts where a definite diagnosis is not possible even when there is good clinical-pathological correlation.

CD30+ lymphoproliferative disorders frequently express CD4+ T-cells; however, rare cases have been shown to demonstrate a cytotoxic T-cell phenotype (CD8+), illustrating the clinical and histopathological spectrum of CD30+ lymphoproliferative disorders. When these neoplasms express CD8+ T-cells, they are usually associated with more aggressive lymphoproliferative disorders such as primary cutaneous aggressive epidermotropic CD8+ cytotoxic T-cell lymphomas, and their distinction is crucial for appropriate clinical management of the patients.

Materials and Methods

19 cases of CD30+ lymphoproliferative disorders with CD8 expression were the back of our study. Cases were collected from the dermatopathology files at Weill Cornell Medical College, New York, NY, Mayo Clinic, Rochester, MN, and the Medical College of Wisconsin, Milwaukee, WI. We described 19 cases of cutaneous CD30+ lymphoproliferative disorders with CD8 expression. The spectrum of cutaneous cytotoxic (CD8+) lymphoproliferative disorders should be expanded to include not only cases of LyP but cases of PCALCL. Based on this and other reported cases, cytotoxic (CD8+) LyP and PCALCL behave in a clinical pattern analogous to CD8+ cases. Some cases may show indistinguishable histomorphologic features from primary cutaneous aggressive epidermotropic CD8+ cytotoxic lymphomas, and therefore, clinicopathologic correlation is of paramount importance for such distinction.

Results

Clinical Findings: LyP: In all 20 cases the lesions were composed of a fairly dense lymphocytic infiltrate lying in intimate apposition to epidermis and infiltrating the mid and deep dermis. The infiltrates in dermis showed nodular configuration in some of the cases. The atypical lymphocytes were intermixed with reactive lymphocytes, histiocytes, eosinophils, neutrophils and plasma cells. In regards to the large atypical lymphocytes, they were predominantly mononuclear with round, reniform nuclei that were centrally located. These atypical lymphocytes had prominent nuclear membranes with finely dispersed conspicuous nucleoli. The cytoplasm varied in amount and was predominantly eosinophilic. The small atypical lymphocytic component showed nuclear knobby in which the nuclear membranes showed irregular lobation with a rim of eosinophilic cytoplasm. Epidermal involvement was observed in 7 cases in which there was epidermal permeation by large atypical cells with some of these cells showing hyperconfluent orthostratification appearance. Two cases showed prominent histiocytic infiltration imparting a granulomatous quality process (case 3 & 6). In 7 cases there was angiocentric lymphocytic infiltrates simulating a lymphomatoid vascular reaction with the presence of striking endothelial cell swelling and mural thickening. Three cases showed vasculitic changes with the presence of mural fibrin deposition (case 5 & 6 & 7). 4 cases showed striking sinuscdiation around the ecircorne cells.

PCALCL: In all 9 cases, the lesions were characterized by a nodular or diffuse infiltrate within the active dermis and in some cases focally involving the subcutis. The atypical lymphocytic infiltrate was composed of large rounded cells with irregularly shaped nuclei with conspicuous nucleoli. The cytoplasm is abundant with a somewhat granular quality. Admixed with these large cells there are giant cells with features reminiscent of Reed-Sternberg cells. Also, some neoplastic cells showed an epithelioid-like configuration. In 4 cases there was epidermotropism that was characterized by permeation of large atypical cells with hyperconfluent appearance. Ulceration was noted in 4 cases and epidermal hyperplasia was seen in 2 cases. In some cases, there was a prominent reactive infiltrate composed of lymphocytes, histiocytes, neutrophils, eosinophils and plasma cells. Some cases were characterized by an increased number of mitosis with the mitotic count in some field being 4 to 5 in one high power field. Apoptosis with considerable apoptotic debris was identified in some cases. One case showed an intravascular component (case 7) and one case showed myxoid changes (case 4).

Histologic Findings: Table 1: Immunohistochemistry and Molecular results of PCALCL

Table 2: Immunohistochemistry and Molecular results of LyP

Conclusions

We described 19 cases of cutaneous CD30+ lymphoproliferative disorders with CD8 expression. The spectrum of cutaneous cytotoxic (CD8+) lymphoproliferative disorders should be expanded to include not only cases of LyP but cases of PCALCL. Based on this and other reported cases, cytotoxic (CD8+) LyP and PCALCL behave in a clinical pattern analogous to CD8+ cases. Some cases may show indistinguishable histomorphologic features from primary cutaneous aggressive epidermotropic CD8+ cytotoxic lymphomas, and therefore, clinicopathologic correlation is of paramount importance for such distinction.