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Pleomorphic T-cell Infiltrate Associated With Molluscum Contagiosum

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The authors observed a pleomorphic lymphocytic infiltrate composed of CD8 cytotoxic/suppressor T-cells in two pediatric cases associated with molluscum contagiosum. T-cell clonality was not detected. In both cases, the lesions resolved after the biopsy was performed. The patients were otherwise healthy, and no evidence of lymphoproliferative process was detected on follow-up. The authors believe the pleomorphic lymphoid infiltrate is inflammatory and reactive in nature. The close apposition of lymphocytes to molluscum bodies and cytoid bodies with high expression of CD30 and the proliferating marker Ki67 is suggestive of a cytotoxic cell-mediate blastic reaction against poxvirus antigens.

Key Words: Molluscum—T-cell—Pseudolymphoma.

Molluscum contagiosum (MC) is a viral infection of the epidermal keratinocytes that results in a cutaneous tumor with characteristic intracytoplasmic inclusions. Although the MC lesions tend to be flesh colored with a central umbilication and without signs of inflammation, occasionally patients present with large and tender nodules. Such atypical presentations may be difficult to diagnose clinically, requiring a biopsy to rule out infectious or neoplastic processes. Biopsies of the cases presented showed a pleomorphic lymphocytic infiltrate of reactive nature that could be a cause of concern for the dermatopathologist.

CASE REPORTS

Case 1.

A 7-month-old infant presented with two papules on the scalp that had been present since the age of 2 months. The infant's mother noted growth of the lesions before presentation. The infant was healthy otherwise.

On examination, two 8-mm smooth red papules with yellow crust and umbilication were noted. There was no evidence of lymphadenopathy or organomegaly. One of the lesions was biopsied, and the other lesion involuted spontaneously shortly after. Skin biopsy showed numerous molluscum bodies surrounded by a dense lymphoid infiltrate composed predominantly of large pleomorphic lymphocytes with rare small round lymphocytes (Fig. 1). The nuclear contour was irregular with hyperchromasia and irregular chromatin distribution. Some of the cells had prominent large nucleoli (Fig. 2). Numerous mitotic figures and some apoptotic cells were seen. Several colloid bodies were also noted among the infiltrate in close apposition with the lymphocytes and often associated with neutrophils and extravasated red blood cells (Fig. 3).

Immunohistochemistry performed on deparaffinized sections demonstrated strong CD3 and CD8 expression by the cells (Fig. 4). CD30 was expressed in approximately 30% of the cells, especially in large lymphocytes

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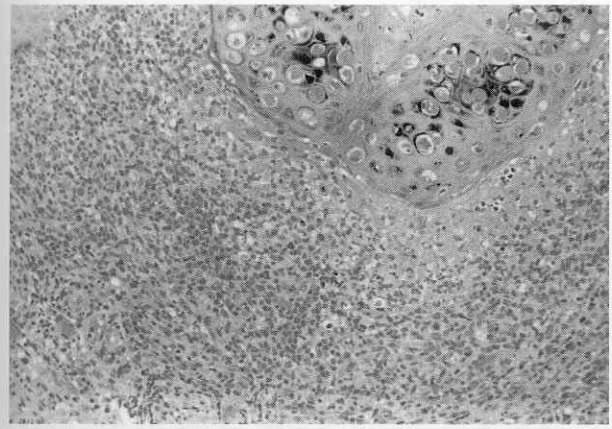

FIG. 1. A dense pleomorphic lymphocytic infiltrate is seen adjacent to the squamous epithelium infected with molluscum bodies.

with ample cytoplasm. CD68 was expressed in approximately 10% of the cells, whereas the B-cell marker CD20 stained less than 5% of the cells. The proliferation marker Ki-67 was expressed in approximately 80% of the lymphoid cells. DNA extracted from the paraffin block showed no evidence of gamma T-cell receptor gene clonality performed by polymerase chain reaction analysis.

Case 2.

An 8-year-old girl presented with a nodule in the abdomen. The lesion appeared 1 year before presentation and recently had become traumatized, inflamed, and tender. The nodule was biopsied. On follow-up, there was no evidence of recurrence or systemic involvement. Histopathology showed a central invagination of the epithelium with numerous molluscum bodies. The surrounding dermis showed a dense infiltrate composed of large and pleomorphic lymphocytes with colloid bodies. The large lymphoid cells showed strong CD3, CD8, and Ki-67 expression. CD30 was expressed in approximately 20% of the cells. CD20 marked approximately 5% of the cells. Numerous histiocytes expressing CD68 were also noted. S-100 protein was negative. DNA obtained from the paraffin block could not be amplified for T-cell clonality analysis.

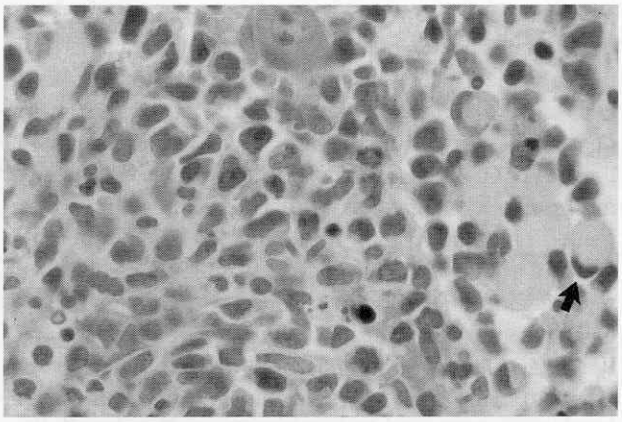

FIG. 3. Among the atypical lymphocytes, there are cytoid bodies in close apposition with the cytotoxic T-cells.

COMMENTS

Molluscum contagiosum virus (MCV), a member of the Poxviridae family, specifically infects human skin, causing a benign epithelial proliferation with intracytoplasmic viral inclusions (1). In general and unlike other poxviruses, e.g., variola, MCV elicits a minimal cell-mediated immune response. Thus, molluscum lesions have few Langerhans cells and a paucity of infiltrating T-cells (2,3). The weak immune response of MCV has been in part attributed to the "viral colony sac," an ultrastructural thin membrane that surrounds the virions within the infected cells, providing an effective barrier against host-immunesurveillance (4). In addition, lipid

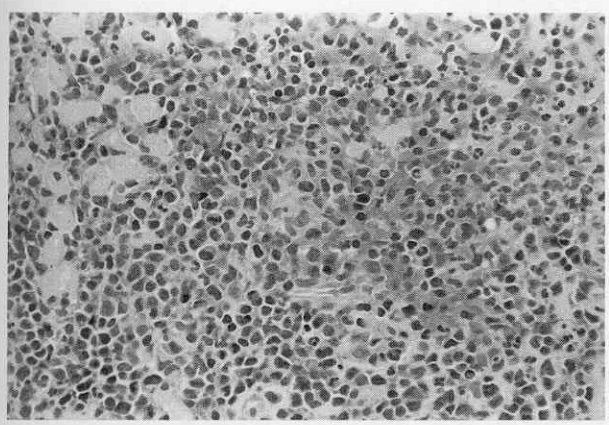

FIG. 2. Pleomorphic mixed lymphocytic infiltrate with numerous large cells and cytoid bodies.

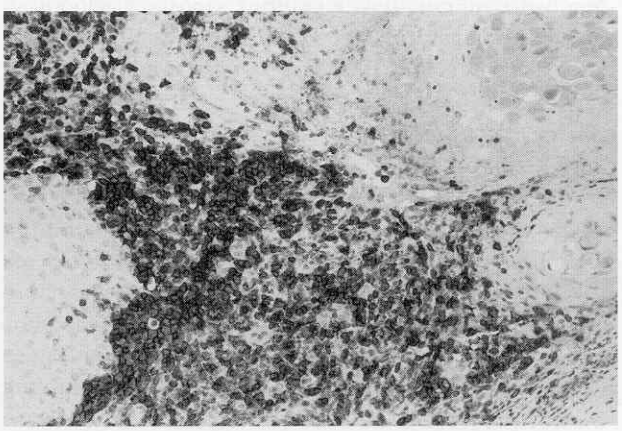

FIG. 4. Overwhelming CD8 (+) T-cell population by immunohistochemistry.

material distributed around the molluscum bodies has been identified by electron microscopy (2). This lipid material may also prevent the expression of viral antigens on the surface of keratinocytes. However, an important role for cell-mediated immunity in the control of the infection is supported by the protracted course of molluscum contagiosum with extensive skin involvement in immunocompromised hosts. Severe presentations of molluscum contagiosum infections have been reported in patients with various forms of impaired T-cell immunity, including atopy, idiopathic CD4 T-lymphocytopenia, immunoglobulin M deficiency, and HIV infection (5–7). Furthermore, the number of molluscum contagiosum lesions has been found to be inversely proportional to the absolute CD4 T-cell counts (8), and complete regression of giant molluscum contagiosum has been reported in an HIV-infected patient after proteinase-inhibitor therapy with improvement of the immune status (9).

Dense inflammatory infiltrates have been previously reported in regressing and traumatized molluscum lesions (10,11). One could speculate that with trauma or manipulation of the lesions, the viral antigens are exposed to the immune system, resulting in an amplification of the inflammatory response. The lipid material of the viral sac, similar to an acne lesion, may also contribute to the inflammatory process, which possibly results in the regression of the molluscum lesions.

We were impressed and concerned with the large and pleomorphic lymphocytes infiltrating the molluscum lesions. Although a lymphoproliferative condition was initially considered, the lack of clonality and the clinical behavior support the reactive nature of the infiltrate. The strong CD30 and CD8 expression and the close contact with molluscum bodies and cytoid bodies is consistent with activated cytotoxic T-cell. The cytologic detail and the high mitotic activity are suggestive of a lymphoblastic transformation in response to MCV. □

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