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Investigation of Molluscum Contagiosum Virus, Orf and other Parapoxviruses in Lymphomatoid Papulosis

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Lymphomatoid papulosis (LyP) is a primary cutaneous CD30+ lymphoproliferative disorder with large, atypical CD-30+ cells, which despite their ominous appearance, also occur in reactive processes, such as CD30+ cutaneous lymphoid hyperplasia. As most causes of CD30+ cutaneous lymphoid hyperplasia are viral,[1] we explored the possibility that poxvirus or parapoxvirus could be detected in lesions of LyP.

Following University of Iowa Institutional Review Board approval, nine patients with a diagnosis of LyP that had available skin tissue blocks were included. For negative controls, two scar tissue samples were included.

DNA was extracted from formalin-fixed, paraffin-embedded slides. Tissue was dewaxed by addition of xylene, vortexing, and centrifuging; xylene was removed and the pellet was rehydrated in 100% ethanol. After vortexing, centrifugation, and air drying, the sample was resuspended in digestion buffer and was incubated at 55°C for 4–6 hrs. Chelex-100 (BioRad) was added to a final concentration of 5%. The mixture was boiled 8 min, chilled 2 min, and centrifuged for 5 min at 4°C. The supernatant was transferred to a fresh centrifuge tube as template.

Quantitative real-time polymerase chain reaction (q-PCR) was performed to detect Molluscum contagiosum virus p43K gene[2]; 10 ul of DNA was used in each assay. To ensure sufficient DNA was present and amplification was not due to presence of an inhibitor, the single copy RNaseP gene was detected by amplification of the DNA sample using a

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TaqMan RNaseP detection reagent kit (Applied Biosystems). A plasmid containing MCV p43K gene served as a positive control[2]. Parapoxvirus generic and orf virus specific q-PCR assays were also performed on the extracted DNA[3], with positive controls using nucleic acid from Ovine Ecthyma Vaccine (Colorado Serum Company) and orf virus.

No molluscum contagiosum, parapoxvirus generic, or orf virus DNA was detected the LyP samples or scars.

Of the many infectious conditions associated with CD30+ cutaneous lymphoid hyperplasias, the most commonly associated viruses have been parapoxviruses (28.5%), herpes simplex and varicella zoster viruses (25%), and molluscum contagiosum virus (10.7%)[1]. Extrapolating these findings to true CD30+ lymphoproliferative disorders, previous studies have explored the possibility that LyP may represent a virally-induced cutaneous lymphoid hyperplasia. One analysis of LyP specimens by PCR demonstrated one out of nine LyP samples with detectable HHV 6 DNA, but no detectable HSV 1 and 2 or EBV DNA. [4]. Recently, biopsy specimens of cutaneous lymphomas (including 3 cases of LyP) were assayed for Merkel cell polyoma virus, human polyomavirus type 6, human polyoma virus type 7, and trichodysplasia spinulosa-associated polyoma virus DNA by q- PCR; the cases of LyP were negative for all viral types[5].

As LyP and parapoxvirus and poxvirus virally-mediated CD30+ cutaneous lymphoid hyperplasias share overlapping clinical features (papular lesions, generally indolent course) and pathologic features (large, atypical CD30+ lymphoid infiltrates), LyP appears an intriguing candidate for induction by viral infection. However, the lack of detection of viral DNA in our LyP specimens argues against a link between parapoxviruses or molluscum contagiosum virus and LyP, although the role of sampling and stage of lesions should be considered.

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