A Case of Molluscum Contagiosum Treated with Diphenylcyclopropenone Immunotherapy

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We are reporting a case of molluscum contagiosum in a 3-year-old boy who showed a good response to diphenylcyclopropenone (DPCP) immunotherapy. The lesions were multiple, 2 to 7mm in size, centrally umbilicated, normal skin-colored papules of 7 months' duration which were distributed on the penoscrotal area, extremities and trunk. In spite of several treatments using extraction and curettage, new lesions developed continuously. The patient was sensitized with 0.1ml of 1% DPCP solution in acetone on his right shoulder and thereafter challenged with solution of varying concentrations (0.05 to 0.1%) on his left shoulder once or twice a week to maintain a mild eczema. Clinical improvement was noted 1 week after sensitization and almost all of the lesions cleared after 8 week's treatment.
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Key Words: Diphenylcyclopropenone (DPCP) immunotherapy, Molluscum contagiosum

Since 1973, topical application of potent sensitizing agents which induce a cutaneous sensitization response has been used in the treatment of some dermatologic disorders including alopecia areata and warts.[1,2] Three compounds of potent sensitizers-dinitrochlorobenzene (DNCB), squaric acid dibutyl ester (SADBE), and diphenylcyclopropenone (DPCP)—have been useful for immunotherapy.

DNCB is one of the most widely used contact sensitizers, but it has recently been shown to be mutagenic in the Ames test, and this caused considerable doubt about its safety in the treatment of skin diseases.[3,4,5] SADBE is not mutagenic in the Ames test but is very unstable. [1,5] On the other hand, DPCP, a new potent sensitizer, is nonmutagenic in the Ames test and stable at room temperature when protected from ultraviolet light.[5,6] Herein, we report a case who had large grouped molluscum lesions which, though resistant to other therapeutic modalities, showed a good response to contact immunotheraphy with DPCP.

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REPORT OF A CASE

A 3-year-old boy was seen at our hospital with multiple, grouped papules on the penoscrotal area, extremities and trunk of 7 months' duration. The lesions, 2 to 7mm in size, were asymptomatic, dome-shaped, grouped or discrete, skin-colored, centrally umbilicated papules, several of which showed hemorrhagic crusts due to previous extraction and curettage (Fig. 1). The clinical diagnosis of molluscum contagiosum was made because of their typical morphology. He and his elder sister had a past history of atopic dermatitis.

Routine laboratory studies, including complete blood count, urinalysis, stool test, T-cell and B-cell count of peripheral blood were within normal limits. KOH examination of extracted material from a skin lesion showed molluscum bodies.

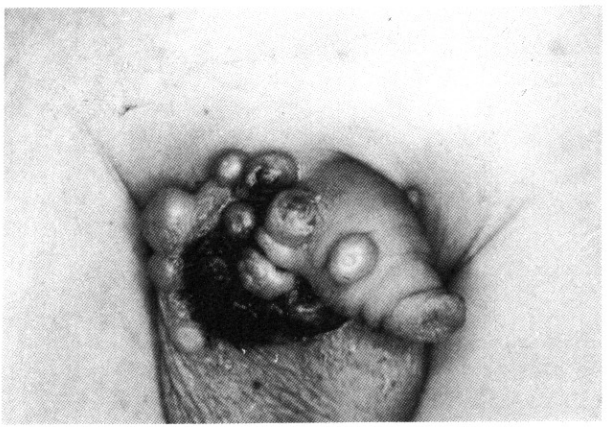

Fig. 1. Multiple, grouped papules and hemorrhagic crusts on the penoscrotal area.

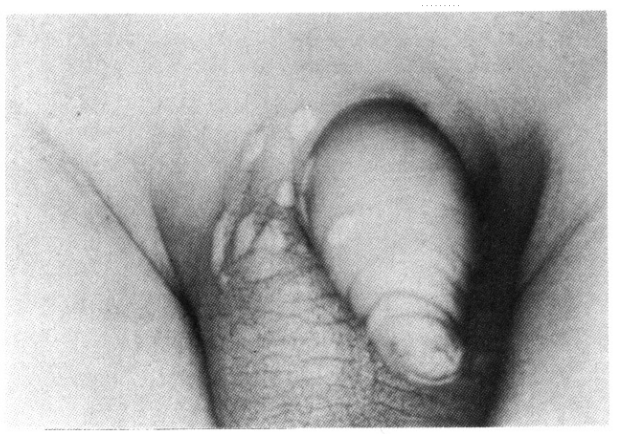

Fig. 2. Clearing of the lesions after 8 weeks' treatment.

In spite of several treatments with extraction and curettage, new skin lesions developed continuously and so a trial of DPCP immunotherapy was attempted. 0.1ml of 1% DPCP solution in acetone was applied for sensitization on his right shoulder. One week later, sensitization occurred, which was confirmed by allergic contact reaction to 0.1% DPCP solution applied on the left shoulder which had previously been normal. As a challenge, 0.05 to 0.1% DPCP solutions were applied to the left shoulder once or twice a week to maintain a mild eczema.

Clinical improvement was noted 1 week after sensitization and almost all of the lesions cleared after 8 weeks' treatment (Fig. 2).

Histopathologic findings for the one of the regressing papules after 5 weeks' treatment showed the typical appearance of a molluscum contagiosum as well as a mononuclear cell infiltrate which huged and entered into the lesion (Fig. 3).

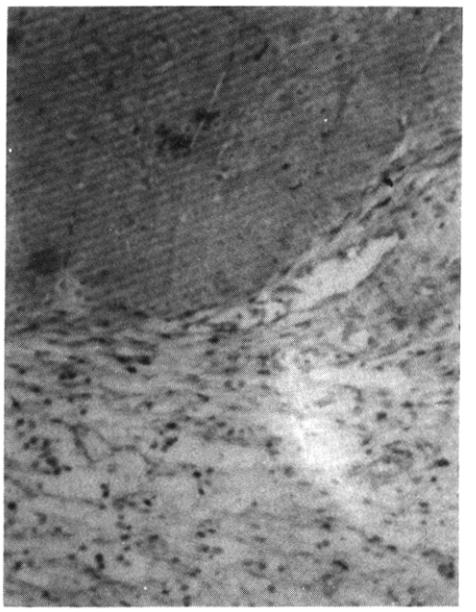

Fig. 3. The regressing papule after 5 weeks' treatment shows that mononuclear cells migrate into the molluscum lobule (H & E stain ×100).

DISCUSSION

DPCP was synthesized in 1959 and was reported to be a contact sensitizer in 1980 by Hansen and Stute.[6] It is a potent contact sensitizer which can be obtained as a 98% pure powder and is stable in solution for 4 weeks if kept at room temperature and protected from ultraviolet radiation.[5,6] In contrast to DNCB, DPCP was nonmutagenic in the Ames test and nonteratogenic in chick and mouse embryos.[1,5] In 1983 Happle et al.[7] published a series of patients with alopecia areata treated with DPCP, and Naylor et al.[1] reported successful therapeutic results in the treatment of resistant warts with contact immunotherapy using DPCP in 1988. Although recently there have been reports about treatment of alopecia areata and warts with DPCP, we could not find any report in the literature on the treatment of molluscum contagiosum with DPCP.

Molluscum contagiosum is a common pox virus infection of the skin especially in children with atopic dermatitis. Most of the lesions may resolve spontaneously in 6 to 9 months, but occasionally

can persist for more than 3 years.[8,9] For the treatment of generalized lesions, there seem few satisfactory remedies available.

Several authors reported the treatment of molluscum contagiosum with DNCB immunotherapy, based on the findings that the lesions frequently regress spontaneously and that spontaneous regression seems to depend on host's ability to mount an immune response against the virus.[10,11] Precise immunologic mechanisms of contact sensitizers acting on virus-infected tissue are not clear, but probably involve a nonspecific cell-mediated process triggered by the immune stimulus.[1]

Steffen and Markman[11] reported a case of spontaneous disappearance of molluscum contagiosum and stated that the molluscum papules did not involute simultaneously, but became inflamed and disappeared individually over a period of months. They also observed histopathologically that the molluscum lobules were surrounded by dense mononuclear cells and that sometimes the cells migrated into the lesions; this reaction led the authors to suggest that the regression was mediated by cell-mediated immunity responses. Similar histopathological findings, in our case, support the assumption that the regression was probably due to enhanced immune responses, whether spontaneous or DPCP-induced.

In our case, we can not exclude the possibility of spontaneous regression, but it can be safely said that clinical improvement could be largely ascribed to strengthening of cell-mediated immunity with DPCP, because of rapid and simultaneous disappearance of large and grouped lesions which developed continuously in spite of several treatments with extraction and curettage. Molluscum contagiosum is a common skin disease and noted for spontaneous regression, therefore, we think it will require more experience to evaluate clinical effectiveness of contact immunotherapy with DPCP for this disease.

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