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Trichodysplasia spinulosa in a bone marrow transplant recipient: A case report

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Abstract

Trichodysplasia spinulosa is a rare skin condition seen in immunocompromised patients, especially in solid organ recipients. A recent review of the literature mentioned that there are 60 reported cases. We report a case in a patient with an allogenic bone marrow transplant. The patient developed white spiky protrusions on different areas of the face which improved after decreasing immunosuppression.

Keywords

Trichodysplasia spinulosa, digitate keratoses, organ transplant

Introduction

Trichodysplasia spinulosa (TS) is disease principally observed in transplant recipients. It is caused by the human polyomavirus named TS-associated polyomavirus. We report a case of this infrequent condition.

Case report

A 60-year-old woman presented to the dermatology clinic with a 1-month history of a mildly pruritic facial eruption predominantly over the forehead, chin, and nasolabial folds. The patient described them as small hair-like protrusions. Medical history included an allogenic bone marrow transplant complicated by graft-versus-host disease. At the time of assessment, the patient's immunosuppression consisted of Prednisone 2.5 mg daily (tapering dose) and mycophenolate mofetil (MMF) 1 g twice daily (Figure 1).

On examination, multiple skin colored follicular papules were identified on the forehead, nose, nasolabial folds, and chin. Some of these papules had white spiky protrusions. No other lesions were noted. During the assessment, a skin biopsy was obtained. Histopathologic examination demonstrated a dilated follicular infundibulum with keratin plugging and abnormal maturation with marked inner root sheath (IRS) differentiation. The IRS cells had prominent eosinophilic cytoplasm and numerous trichohyaline granules. There was persistence of the outer root sheath beyond the isthmus. These changes were consistent with the diagnosis of TS (Figure 2).

After the diagnosis was established, MMF was decreased (prednisone had already been discontinued at this time). This led to some improvement. Cidofovir 3% solution was prescribed, but unfortunately it is not readily available.

Discussion

TS was first described by Izakovic et al.[1] in 1995 as a disseminated follicular spiny hyperkeratosis which was thought to be a side effect of cyclosporin. Subsequent case reports clarified that an immunosuppressed state, and not cyclosporin per se, was the common thread between patients with this condition.[2] In 1999, Haycox et al.[3] documented the presence of a virus within the lesions through electron microscopy, but it was not until 2010 when the culprit virus was identified as trichodysplasia spinulosa-associated polyomavirus (TSPyV).[4]

Trichodysplasia spinulosa is a rare skin condition seen in immunocompromised patients.[5] A recent review of the

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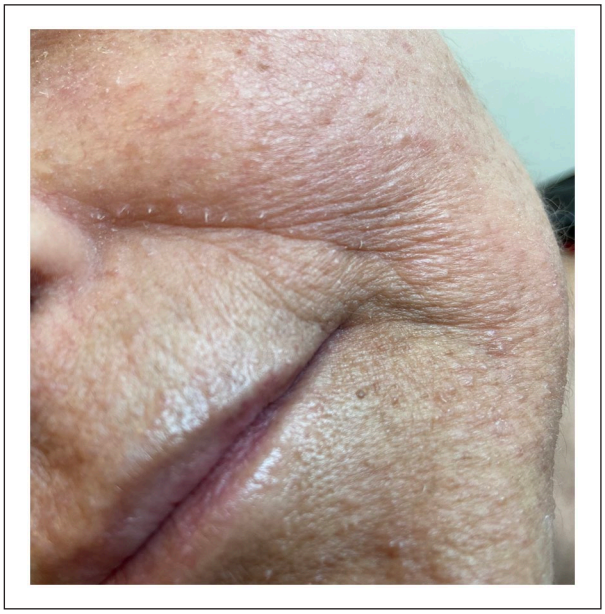

Figure 1. Trichodysplasia spinulosa. Keratotic follicular white spicules.

literature mentioned that there are 60 reported cases.[5] Most patients are solid organ transplant recipients,[6] but TS has also been described in patients with immunosuppression due to medications, cancer, and HIV.[5] There is one reported case of TS in a patient with Gorlin's syndrome who was being treated with vismodegib for multiple basal cell carcinomas.[7]

TSPyV, also known as human polyomavirus 8, is one of at least 13 polyomaviruses known to infect human cells.[8] Serological studies have revealed that TSPyV infection is relatively common in the general population.[9] A study from the Netherlands estimated the seroprevalence at 70% in the immunocompetent and 89% in the immunocompromised populations.[10] It has been suggested that transmission of the virus likely occurs during childhood between family members due to close personal contact.[11] The precise mechanism of transmission of TSPyV remains to be elucidated.

Hypotheses about the potential pathophysiology of TS include (1) symptomatic reactivation of latent TSPyV due to immunosuppression, (2) repeat exposure to TSPyV while immunosuppressed, and (3) primary infection with TSPyV while immunosuppressed.[10] A study by van der Meijden et al.[12] suggests that TS results from primary infection, potentially of the nasopharynx, in the immunosuppressed. This differs from the classic polyomaviruses JC (JCPyV) and BK (BKPyV) which are due to reactivation of latent infection.[12] TSPyV DNA has been detected in other tissues including tonsils, renal allograft tissue, cerebrospinal fluid, and cardiac tissue, although its clinical significance in these sites is not known.[13]

TS presents as an eruption of erythematous papules, many with keratotic follicular white spicules, localized to the central face (glabella, nose, and chin) and ears.[14] As the disease

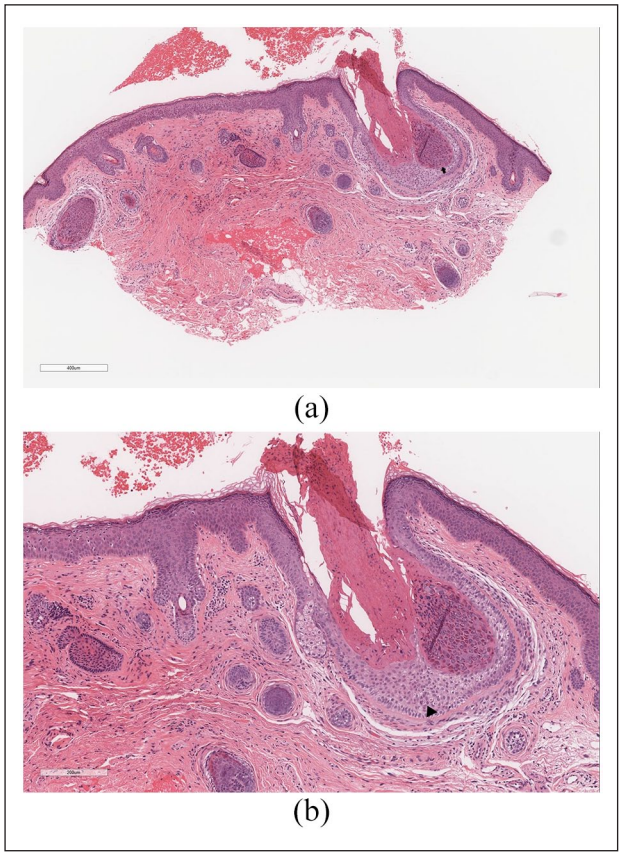

Figure 2. (a) Low power photomicrograph (50×) of an H&E stained section of skin showing dilated follicular infundibulum with keratin plugging and abnormal maturation with marked inner root sheath differentiation (black arrow). Abnormal hair bulbs lacking fully formed papillae are noted. (b) Medium power photomicrograph (100×). The inner root sheath cells have prominent eosinophilic cytoplasm with numerous trichohyaline granules. Dyskeratotic cells are also seen (black triangle).

progresses, alopecia of the eyebrows can be observed, as well as leonine facies.[10] Involvement of the trunk and extremities is less common.[3,15] The most specific dermatoscopic clue for distinguishing TS from other hyperkeratotic disorders is the presence of bright white spicules that protrude peripherally from follicular openings.[16]

Histologic examination shows infundibular dilatation containing hyperkeratotic and parakeratotic debris with an absent or fragmented hair shaft. The hair bulb shows proliferation of large eosinophilic (IRS) cells and overall loss of normal anagen follicle architecture. A thin rim of germinative basophilic cells of the hair papilla surrounds the mass of IRS epithelium characterized by prominent cytoplasmic trichohyaline granules. Toluidine blue stain confirms IRS keratinization.[14]

The differential diagnosis of TS includes several conditions, but most of them can be excluded with the appropriate clinical context and histopathologic evaluation; keratosis pilaris and lichen spinulosus being among the most common

ones.[4] A review by Caccetta et al.[17] presents a useful algorithm for the clinical approach of other so-called digitate keratoses; defined as dermatoses that present with minute finger-like projections. According to their classification, this term encompasses the following: multiple minute digitate hyperkeratosis, lichen spinulosus, phrynoderima, postirradiation digitate keratosis, hyperkeratotic spicules, TS, and spiny keratoderma.[17]

Curman et al.[5] concluded that topical cidofovir, especially the 3% formulation, appears to be the most effective treatment for TS. Other therapies such as oral valganciclovir and reducing immunosuppression have been reported as effective. There is a case report of successful treatment with leflunomide in a liver transplant recipient with diffuse disease.[18]

Although TS is a rare disease, it is important for clinicians and dermatopathologists, especially those caring for transplant patients, to be aware of its existence and treatment alternatives.

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Patient consent

Patient has given written consent to the use non-identifiable clinical information and the use of a non-identifiable photograph.

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