Title: Recurrent Cellulitis and Abscesses in the Setting of Palmoplantar Keratoderma and HIV

Authors: Cameron LaFleur, BS, MS, LSUHSC – New Orleans, Madeleine Degrange, MD, Tulane Internal Medicine

Introduction: Palmoplantar keratodermas comprise a large group of diseases characterized by persistent thickening of the epidermis at the palmar and/or plantar surfaces that cannot be attributed to friction alone. An autosomal dominant subtype of inherited palmoplantar keratodermas known as punctate palmoplantar keratodermas (PPPK) manifests with hyperkeratotic papules or plugs in the palmar creases and soles. These lesions may fall or be picked off leaving behind pores or pits in the palmar creases. All known PPPKs arise from mutations in AAGAB and COL14A1 genes. The AAGAB gene is involved in keratinocyte proliferation, while the COL14A1 gene is required for fibrillogenesis. PPPK is most commonly observed in patients of African descent. Primary treatments include mechanical debridement, emollients, or keratolytics such as urea, salicylic acid, and lactic acid. Oral retinoids and topical calcipotriol are alternative treatment options.

Case Presentation: A 42 year old male presented to the emergency department (ED) for left hand pain, swelling, and limited range of motion for the past three days. He was given unknown oral antibiotics and a topical cream from an outside ED three days ago with no relief. He denied fever, drainage, or other symptoms. He noted that he has developed raised punctate lesions on his palmar creases and soles since adolescence. He reported that they cause him pain so he picks at them until they fall off leaving behind a pit. He reported a history of abscesses beneath these lesions, requiring incision and drainage procedures on his right hand. His sister and cousin develop similar lesions, but don't experience infection. His medical history was significant for HIV managed with Biktarvy. He works as a chef on a cruise line, and noted that food, water, and spices become trapped in his gloves and irritate his palmar lesions, which affects his ability to work. He also ran out of his Biktarvy prescription a month before his ED visit and has been unable to refill it. Physical exam was significant for swelling of the left thenar eminence with a hyperkeratotic papule over the left lower thumb crease. There was mild tenderness to palpation of the bilateral palms with swelling and tenderness of the left hand and decreased range of motion of digits. He had diffusely scattered pits over the bilateral palmar creases, and diffusely thickened and dry skin on his bilateral soles. Relevant labs included an HIV viral load of 153,000 copies per mL and an absolute CD4 count of 258 per cubic mm. Computerized tomography with contrast of the left hand showed a 1.3 centimeter abscess of the left thenar eminence for which he was started on intravenous vancomycin and Zosyn. His Biktarvy was resumed. A diagnosis of PPPK was made due to the characteristic lesions and a demonstrable family history. He was counseled not to pick at the lesions, and to try topical keratolytics such as salicylic acid. He showed progressive improvement of his abscess and cellulitic symptoms over several days and was discharged with oral cephalexin, doxycycline, and outpatient referral to dermatology.

Discussion: PPPK is generally considered a benign condition. This patient, however, had occupational and medical factors that interacted with his PPPK to increase morbidity. His recurrent cellulitis and abscesses impaired his ability to work, required repeated invasive

medical interventions, and generally reduced his quality of life. This case exemplifies how PPPK can cause significant medical burden and is not benign for some patients. The way that PPPK interacts with other diseases, such as HIV and other immunocompromising conditions is poorly described. Moreover, while some treatments have been established, accessible, effective options are limited. Overall, greater awareness for this disease, better treatment options, and a better understanding of its interactions with other common diseases are necessary to address the needs of this patient population.

References:

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