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Atypical facial pustular folliculitis by *Klebsiella pneumoniae*: a case report

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Abstract
Klebsiella pneumoniae is a gram-negative bacterium rarely responsible for skin infections that are often difficult to diagnose. We present the case of an atypical presentation of this particular disease by site, absence of predisposing factors and duration of the condition.

Case Report
We present the case of a 68-year-old male patient from Ethiopia working as a greengrocer at a public outdoor market, coming to our attention for a 5-year history of facial dermatitis with an exacerbation that occurred in the last year.
There were no comorbidities and past medical history was negative. The patient's general conditions were good and he did not refer any other symptoms such as diarrhea, fever or headache. Furthermore, blood count, creatinine, transaminases, alkaline phosphatase, gamma-glutamyltransferase, lipids profile and glucose were all in the normal ranges. The patient had already been treated during the previous year with topical and oral metronidazole in the suspicion of acne rosacea, but with only partial and temporary benefit. Differential diagnoses also included drug eruption, but this hypothesis was ruled out since the patient did not report the use of any drug in the recent past.
Physical examination showed multiple nodules, pustules and crusts diffuse to the forehead, nose, cheeks and chin (Figure 1). Based on the clinical presentation, we suspected a pustular folliculitis and we started a 3-weeks cycle of antiseptic therapy with topical benzalkonium chloride solution and sulfur-salicylic cream, combined with an empiric topical antibiotic therapy with gentamycin cream that partially reduced the number of crusts. In consideration of the incomplete resolution, we performed a 5 mm punch skin biopsy from the left cheek.
The histological exam showed a mixed perifollicular and intrafollicular inflammatory infiltrate, rich in granulocytes, and with pustules formation. A moderate number of eosinophils and foci of dermal necrosis with slight fibrosis were present. No granuloma formation was reported. Diffused bacterial colonies and demodex folliculorum were present. The histological findings were consistent with the pustular folliculitis hypothesis. Cultural examination performed from a skin biopsy specimen turned positive for *Klebsiella pneumoniae* (KP), a gram-negative bacterium that usually affects the lungs. The antibiogram revealed a susceptibility to the combination of amoxicillin and clavulanic acid, thus we decided to introduce an oral therapy with a dose of 875/125 mg bid.
After one week, there was a partial clinical improvement and, in consideration of a susceptibility of the bacterium also to gentamycin assessed though a second swab, we associated gentamycin cream 0.1% bid for another week. After one week of this combined antibiotic therapy, we reached an almost complete clinical resolution (Figure 2). Serum creatinine was measured weekly during the course of the treatment, revealing no alterations of renal function. After three months, the patient came back to our institute for a follow up visit. The physical examination did not show any recrudescence of the clinics.

Discussion
Humans are the primary reservoir for KP and carrier rates of KP in the community range from 1 to 6 percent in the nasopharynx; Klebsiella species are rarely carried on the skin.[1] Cutaneous infections caused by KP are reported mostly in individuals with impaired host defenses (*e.g.*, diabetes mellitus, alcoholism, malignancy, hepatobiliary disease, chronic obstructive pulmonary disease, glucocorticoid therapy, and renal failure).[2,3] In these cases, KP can cause very severe necrotizing fasciitis (NF), a life-threatening condition that is more diffused in some Asiatic countries.[4] NFs caused by KP often lead to limbs amputation or to a septic status with 60% of mortality rate. An emerging public health problem is related to the recent diffusion of multidrug-resistant KP's strains with increasing difficulties in managing the pulmonary, urinary tract or skin infections caused by this pathogen.[5] In literature, there are only few data on possible professional

exposures as risk factors for this infection, as illustrated by a report of food handlers who developed KP central nervous system infections.[6]

Conclusions

Our case is peculiar because of the atypical localization of the infection, the long duration of the disease and the total lack of predisposing conditions. It can be considered an unusual facial pustular folliculitis caused by KP. We believe it is important to share this rare presentation and treatment of a KP cutaneous infection, in order to improve the diagnostic abilities and the management of this uncommon etiological agent of skin infectious disease.

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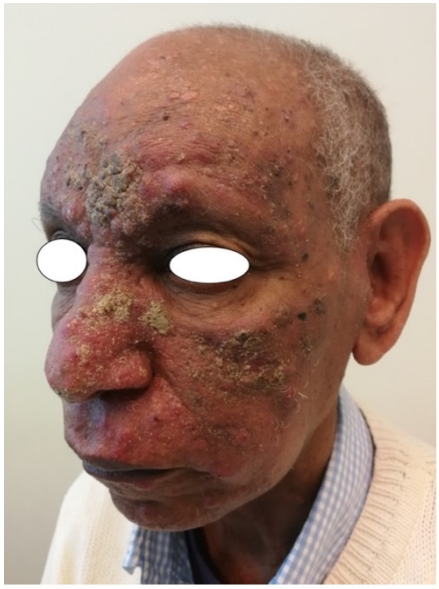

Figure 1. Clinical presentation with multiple nodules, pustules and crusts widespread at forehead, nose, cheeks and chin.

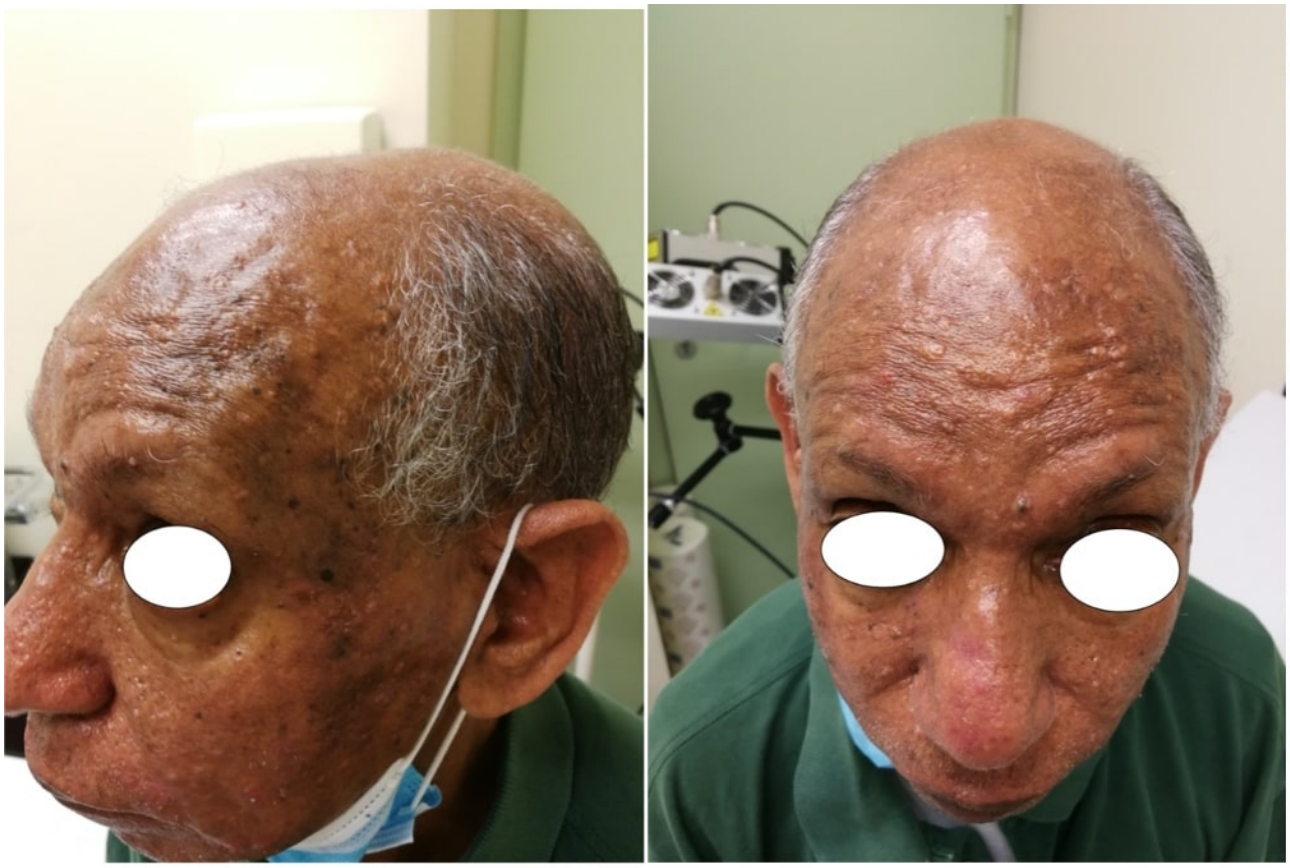

Figure 2. Subtotal clinical resolution after one week of combined topical and systemic antibiotic therapy.