Clinical and cytologic features of antibiotic-resistant acute paronychia

Murat Durdu, MD,[a] and Vincenzo Ruocco, MD[b]
Adana, Turkey, and Naples, Italy

Background: Acute paronychia usually is treated as a bacterial infection, but antibiotic-resistant acute paronychia may be caused by other infectious and noninfectious problems.

Objective: We sought to describe the clinical, etiologic, cytologic, and therapeutic features of antibiotic-resistant acute paronychia.

Methods: A retrospective review of medical records and cytology was performed in 58 patients (age, 1 month-91 years; 36 children and adolescents [62%] and 22 adults [38%]) who had antibiotic-resistant acute paronychias.

Results: Causes of paronychia included bacteria (25 patients [43%]), viruses (21 patients [36%]), fungi (5 patients [9%]), drugs (3 patients [5%]), pemphigus vulgaris (3 patients [5%]), and trauma (1 patient [2%]). Diagnostic cytologic findings were noted in 54 patients (93%); no diagnostic cytologic findings were present with drug-induced (3 patients) or traumatic (1 patient) paronychia. The most common predisposing factors were the habits of finger- or thumb-sucking (14 patients [24%]) and nail-biting (11 patients [19%]). Complications included id reaction with erythema multiforme in 3 patients (5%).

Limitations: Limitations include retrospective study design from 1 treatment center.

Conclusion: Antibiotic-resistant acute paronychia may be infectious or noninfectious. Cytologic examination with Tzanck smear may be useful diagnostically and may prevent unnecessary use of antibiotics and surgical drainage. (J Am Acad Dermatol 2014;70:120-6.)

Key words: diagnosis; erythema multiforme; fungus; herpes virus; infectious diseases; orf virus; pemphigus vulgaris; Tzanck smear.

Acute paronychia usually is caused by infection, and bacteria are the most common causative organisms. In addition, herpes virus, orf virus, and some fungi can cause acute paronychia.[1,2] However, acute paronychia usually is treated as a bacterial infection. Most (65%) herpetic paronychias are initially misdiagnosed as bacterial paronychia.[3] Therefore, topical and systemic antibiotics frequently are prescribed and may be misused for several weeks. The unnecessary use of antibiotics may cause the development of antibiotic-resistant bacteria.[4] Surgical drainage without antibiotic therapy may be an acceptable treatment in most patients who have acute paronychia, but it is important to distinguish nonbacterial from bacterial paronychia; viral paronychia may be a self-limiting infection for which surgical treatment is not indicated.[5]

Cytology is a simple, rapid, reliable, and inexpensive diagnostic method that has been used for the diagnosis of various infectious and noninfectious cutaneous diseases.[6-9] In our clinic, we have been performing the Tzanck smear regularly during the past 7 years for patients who could not be given a

From the Başkent University Faculty of Medicine, Department of Dermatology, Adana Hospital[a]; and Department of Dermatology, Second University of Naples.[b]
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Correspondence to: Murat Durdu, MD, Başkent University Faculty of Medicine, Department of Dermatology, Adana Hospital, Seyhan, 01130, Adana, Turkey. E-mail: sivandr@hotmail.com.
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diagnosis by dermatologic examination alone. We developed an algorithmic approach for the diagnosis and therapy of acute paronychia using the Tzanck smear findings.

The purpose of this retrospective study was to describe the clinical, etiologic, cytologic, and therapeutic features of acute paronychias that did not respond to antibiotic treatment.

CAPSULE SUMMARY

- Acute paronychia usually is treated as a bacterial infection.
- In 58 patients who had antibiotic-resistant acute paronychia, 33 patients (57%) had nonbacterial causes; cytology (Tzanck smear) showed diagnostic findings in 54 patients (93%).
- In paronychia, cytology may improve diagnosis and prevent unnecessary antibiotics and surgical drainage.

METHODS

Patients

This study was conducted between February 2011 and February 2013 at the Department of Dermatology, Başkent University Faculty of Medicine, Adana Teaching and Medical Research Center, Adana, Turkey. We retrospectively analyzed the medical records of all patients who had acute paronychia that was resistant to systemic antibiotic. The clinical and cytologic findings were recorded. Patients were excluded because of paronychia caused by an ingrown nail, chronic paronychia with nail dystrophy, and untreated acute paronychia. Approval of the ethics committee was deferred because the study neither affected routine treatment of patients nor required any intervention.

Tzanck smear: Preparation and evaluation

Each lesion was cleaned with a 70% alcohol swab. A small incision was made at the edge of the lesion and tissue was scraped through this incision (slit-skin smear). All incisions were made superficially to avoid excessive bleeding. The cellular tissue obtained was spread as a thin layer onto 2 or more microscopic slides and air dried. All specimens were stained with May-Grünwald-Giemsa (Bio-Optica, Milan, Italy). When numerous cocci and bacilli were detected in the smear, a Gram stain was performed. In specimens showing only acantholytic cells on cytologic examination, direct immunofluorescence microscopy was performed. The stained preparations were evaluated under a light microscope by a dermatologist (×10 and ×40 magnification; ×100 magnification with immersion oil). The clinical and cytologic findings were photographed with a digital camera (resolution, 1600 × 1200 pixels) (Kodak EasyShare Z700, Kodak, Rochester, NY), and the images were stored in compressed (4:1) Joint Photographic Experts Group format.

Definitive diagnosis

Diagnoses of herpetic paronychia, orf virus paronychia, fungal paronychia, and paronychia caused by pemphigus vulgaris were made by evaluating the cytologic features and laboratory findings, including bacterial and fungal cultures and direct immunofluorescence tests on the cytologic smears (Fig 1). When paronychia developed after the use of drugs and there were no diagnostic cytologic findings, the paronychia was diagnosed as drug induced. When paronychia developed after trauma and there were no diagnostic cytologic findings, the paronychia was diagnosed as traumatic.

Treatment

Bacterial paronychia was treated with antibiotics according to the results of antibiotic susceptibility testing. Fungal paronychia was treated initially with itraconazole (100 mg twice daily for 2 weeks) and subsequently according to antifungal susceptibility results. Orf paronychia was treated with topical antibiotic cream. Herpetic paronychia was treated with systemic acyclovir tablets or syrup. Drug-induced paronychia was treated by decreasing the drug dosage and prescribing topical steroid and antibiotic creams. Paronychia caused by pemphigus vulgaris was treated with systemic corticosteroids.

RESULTS

The 58 patients included in the study were aged from 1 month to 91 years; most patients were children and adolescents, and there were more female than male patients (Table I). There were more lesions in the hands than the feet (Table II). In 10 patients, there was multiple nail involvement; in 1 of these patients who had herpetic paronychia, all 10 fingernails were involved. The mean duration of paronychia was 13 days (7-21 days), and all patients had used antibiotics previously with no response.

Cytologic examination, performed on all patients, showed diagnostic findings in 54 patients (93%) (Table I). The most common cause of antibiotic-resistant paronychia was bacterial infection (cocci or bacilli), most commonly *Staphylococcus aureus* (Table I and Fig 2 [available at http://www.jaad.org]). Acantholytic cells were observed in 5 patients who had bacterial paronychia caused by *Staphylococcus aureus*. However, most patients