

# Citrobacter koseri in Scalp Folliculitis

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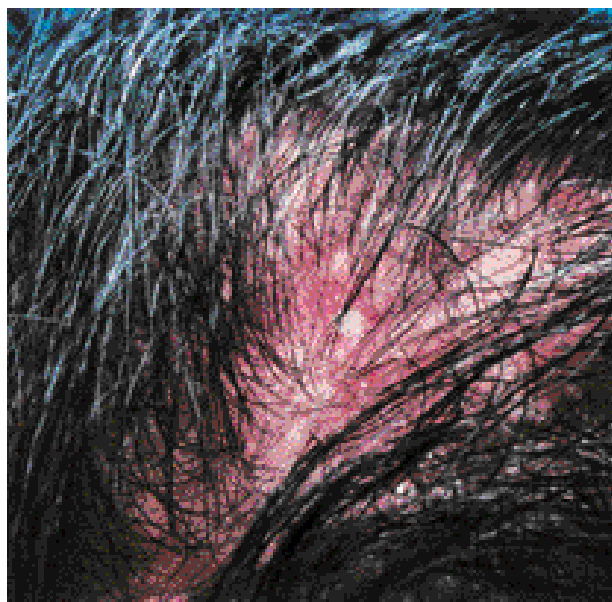
*Gram-negative folliculitis, an uncommon condition, is most often seen in older patients who have acne and who either have received prolonged courses of antibiotic therapy or have used antibacterial cleansers that selectively inhibit gram-positive organisms. Citrobacter infections are uncommon, and dermatologists seldom encounter them. In the past, these infections occurred in hospitals, particularly in neonatal intensive care units. Bacteremias also occur in elderly or immunocompromised patients. In this article, we present a case of Citrobacter koseri scalp folliculitis in an otherwise healthy patient.*

Gram-negative folliculitis, first described in 1968,<sup>1</sup> has 2 clinical varieties—one characterized by superficial comedo-free pustules extending from the infranasal area to the chin and cheeks (~80% of patients) and the other characterized by deep nodular and cystic lesions. This uncommon condition may develop as a complication in patients who have acne vulgaris<sup>2</sup> and usually develops in patients who have received oral antibiotics over prolonged periods.<sup>3</sup>

*Citrobacter* infections are rare and may affect both infants and adults. Authors have reported bacteremias in elderly or immunocompromised patients,<sup>4</sup> vertical transmission from mother to infant,<sup>5</sup> and meningitis<sup>6</sup> and osteomyelitis<sup>7</sup> in neonates. In patients with unaltered host defenses, cutaneous cases are very rare. We found only one report of *Citrobacter freundii* folliculitis<sup>8</sup> and no mention of *Citrobacter koseri* scalp folliculitis.

## Case Report

A 49-year-old white man had a 5-year history of recurrent pustular eruptions on the scalp, mainly on



Pustules on the parietal area of the scalp were ringed with erythema.

the occipital and parietal areas, and on the posterior area of the neck, with occasional development of erythema and papules on the face, particularly on the chin and cheeks. Folliculitis decalvans and rosacea had been clinically diagnosed. The patient had been treated with oral antibiotics (tetracycline, minocycline, doxycycline, metronidazole, ciprofloxacin), oral retinoids (isotretinoin 20 mg/d for 4 months), systemic steroids (prednisone), topical cleansers, and topical antibiotics (clindamycin, erythromycin), all with only temporary benefit.

At one visit, multiple superficial pustules (2–3 mm in diameter) were evident on the scalp, mainly on the occipital and parietal areas; these pustules were ringed with erythema (Figure). Results of a punch biopsy showed an epidermal pustule with chronic inflammatory infiltrate surrounding blood vessels and hair follicles, and culture results were positive for *C koseri* sensitive to ciprofloxacin. This antibiotic was given orally at a dosage of 500 mg twice daily for 3 weeks, and the

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lesions almost disappeared; the dosage was then reduced to 500 mg once daily, but new lesions appeared. A second culture had positive results for the same gram-negative bacilli with the same sensitivity to ciprofloxacin. Blood counts, liver and renal function, and glucose and cholesterol levels were normal. Human immunodeficiency virus status was negative. Cultures from nasal and throat swabs, urine, and stool were negative for the bacilli. Results of gallium-67 scintigraphy showed no internal infectious focus. Ciprofloxacin 500 mg twice daily was prescribed again; one month later, the lesions were gone, and this treatment was stopped. Minocycline was then prescribed for the small rosacea papules that had developed on the cheeks. *Staphylococcus epidermidis* was cultured from a relapse on the scalp one month later.

### Comment

*Citrobacter* infections usually affect patients whose host defenses have been altered<sup>9</sup>; our patient, however, did not exhibit such an alteration. We believe that his opportunistic scalp infection could have been caused by one or two factors associated with gram-negative folliculitis: long-term broad-spectrum antibiotic (mainly tetracycline) therapy for acne vulgaris<sup>10</sup> and intensive use of antibacterial cleansers.<sup>1,8</sup> Our attempts to determine the source of *Citrobacter* in his skin condition were unsuccessful, as were attempts made in other cases.<sup>8</sup> The genitourinary tract was identified as the main source of *C koseri* in some bacteremia cases.<sup>4</sup> To our knowledge, however, *C koseri*

has never been associated with a skin condition such as folliculitis.

### REFERENCES

1. Fulton JE Jr, McGinley K, Leyden J, et al. Gram-negative folliculitis in acne vulgaris. *Arch Dermatol*. 1968;98:349-353.
2. Leyden JJ, Marples RR, Mills OH Jr, et al. Gram-negative folliculitis—a complication of antibiotic therapy in acne vulgaris. *Br J Dermatol*. 1973;88:533-538.
3. Blankenship ML. Gram-negative folliculitis: follow-up observations in 20 patients. *Arch Dermatol*. 1984;120:1301-1303.
4. Drelichman V, Band JD. Bacteremias due to *Citrobacter diversus* and *Citrobacter freundii*: incidence, risk factors and clinical outcome. *Arch Intern Med*. 1985;145:1808-1810.
5. Finn A, Talbot GH, Anday E, et al. Vertical transmission of *Citrobacter diversus* from mother to infant. *Pediatr Infect Dis J*. 1988;7:293-294.
6. Enzenauer RW, Basilio FS, Ettinger D, et al. Neonatal meningitis caused by *Citrobacter diversus*: case report. *Mil Med*. 1982;147:377-379.
7. Jansen RD, Meadow WL, Schwartz IK, et al. "Bacteriological bit": *Citrobacter diversus* osteomyelitis in a neonate. *Clin Pediatr (Phila)*. 1981;20:791.
8. Mostafa WZ. *Citrobacter freundii* in Gram-negative folliculitis. *J Am Acad Dermatol*. 1989;20:504-505.
9. Schlossberg D, Ricci JA, Fugate JS. Dermatologic manifestations of *Citrobacter* septicemia. *J Am Acad Dermatol*. 1981;5:613-615.
10. James WD, Leyden JJ. Gram-negative folliculitis—recognition and treatment. *J Am Acad Dermatol*. 1983;9:165-166.