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## Microbiology of infected eczema herpeticum

Itzhak Brook, MD, MSc, Edith H. Frazier, MSc, and Josef K. Yeager, MD  
*Bethesda, Maryland*

From the Departments of Pediatrics, Dermatology, and Laboratory Medicine, Naval Hospital.

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Reprint requests: Itzhak Brook, MD, MSc, POB 70412, Chevy Chase, MD 20813-0412.

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Secondary bacterial infection in eczema herpeticum (EH) is common. *Staphylococcus aureus* alone or mixed with group A  $\beta$ -hemolytic streptococci (GABHS) and *Pseudomonas aeruginosa* were found to be the major isolates from patients with secondary bacterial infection in EH.<sup>1</sup>

Previous studies of the microbiology of secondary bacterial infection of EH employed meth-

**Table I.** Isolation of organisms from 23 secondarily infected eczema herpeticum lesions at different anatomic locations

	Fingers	Hand	Leg	Trunk	Face and neck	Total No. of isolates
No. of specimens	6	4	3	5	5	
Aerobic bacteria						
<i>S. aureus</i>	2	1	1	2	2	8
<i>S. epidermidis</i>	1					1
$\alpha$ Streptococcus				1		1
Group A Streptococcus	3	1		1	1	6
<i>E. coli</i>			1			1
<i>P. aeruginosa</i>			2	1		3
Total No. of aerobes	6	2	4	5	3	20
Anaerobic bacteria						
<i>Peptostreptococcus</i>	1	2		2	1	6
<i>P. acnes</i>		1	1	1		3
<i>B. fragilis</i> group			1			1
Pigmented <i>Prevotella</i> and <i>Porphyromonas</i> spp.	2				2	4
<i>Fusobacterium</i> spp.	1				1	2
Total No. of anaerobes	4	3	2	3	4	16
Fungi						
<i>Candida</i> spp.	1					1
<i>C. albicans</i>					1	1
Total No. of isolates	11	5	6	8	8	38

ods adequate only for the recovery of aerobic and facultative bacteria. The purpose of this retrospective study was to identify the aerobic and anaerobic bacteria of secondarily infected EH lesions.

Twenty-three specimens that were submitted for recovery of aerobic and anaerobic bacteria were obtained between September 1983 and 1992 from patients with secondarily infected EH lesions. Patients' ages ranged from 8 to 58 years (mean, 34 years) and 16 were female. None received prior local or systemic antibacterial or antifungal therapy. Specimens were collected, processed, and cultured for aerobic and anaerobic bacteria as previously described.<sup>2</sup> The retrospective study was approved by the Institutional Review Board.

Aerobic or facultative anaerobic bacteria only were present in nine specimens (39%), anaerobic bacteria only in four (17%), mixed aerobic and anaerobic bacteria in 8 (34%), and *Candida* spp. in two (9%). A total of 38 isolates (20 aerobes, 16 anaerobes, and two *Candida* spp.) were recovered, an average of 1.7 isolates per specimen (0.9 aerobes, 0.7 anaerobes, and 0.1 *Candida*) (Table I).

Eight lesions (35%) yielded a single organism (four were *S. aureus*). Three yielded pure cultures of a single anaerobe, two of *Peptostreptococcus* spp., and one of *Prevotella intermedia*.

*S. aureus* was present in eight infections (35%) and was isolated from all areas. *S. aureus* mixed with anaerobic bacteria was recovered in two instances, once with *Propionibacterium acnes* and once with *Peptostreptococcus* spp. *S. aureus* was mixed with GABHS in one case. GABHS was mostly recovered from the extremities. Gram-negative aerobes (*P. aeruginosa* and *Escherichia coli*) were recovered from areas on the leg and trunk.

The predominant anaerobes were *Peptostreptococcus* spp., which were isolated from all sites. *Bacteroides fragilis* was recovered from the leg, and pigmented *Prevotella* and *Porphyromonas* spp. as well as *Fusobacterium* spp. were recovered from the fingers, face, and neck.

$\beta$ -Lactamase activity was detected in 12 isolates recovered from 10 patients (43%); these were all isolates of *S. aureus*, *E. coli*, and *B. fragilis*, one of three *P. aeruginosa*, and one of the four pigmented *Prevotella* and *Porphyromonas* spp.

The present report highlights the diversity of the microbiology of secondarily infected EH lesions.

*S. aureus*, the most prevalent aerobe, was recovered from all body sites. As was previously reported in non-EH-infected eczema, *S. aureus* was recovered in half of the cases mixed with other organisms.<sup>1,2</sup> In contrast, organisms resident on mucous membranes close to the lesions predominated in infections next to these membranes. In this fashion, aerobic gram-negative rods and *B. fragilis* were found in trunk and leg lesions. The most probable sources of these organisms are the rectal and vaginal orifices, where they normally reside.<sup>3</sup>

GABHS, pigmented *Prevotella* and *Porphyromonas*, and *Fusobacterium* spp. were most commonly found in lesions of the face, neck, and fingers. These organisms probably reached these sites from the oral cavity where they are part of the normal flora.<sup>3</sup> They were also found to predominate in paronychia for the same reason,<sup>4</sup> and

similar distribution of bacterial flora was observed in cutaneous abscesses.<sup>5</sup>

The pathogenic role of the organisms isolated from secondarily infected EH lesions has not yet been determined. Although many of these organisms can also be recovered from skin surfaces and mucous membranes, their recovery in infected EH lesions may signify their involvement in the secondary infection. When cultures are obtained from secondarily infected EH lesions, they should be processed for the recovery of aerobic as well as anaerobic bacteria.

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