Kentucky Antimicrobial Stewardship Innovation Consortium

Educational Pearl

Beat the Bug: *Lactobacillus* spp.

Lactobacillus spp. are anaerobic gram-positive bacilli that are commensal organisms within the gastrointestinal tract and the female genitourinary system.[1] Due to their low virulence and commensal nature, *Lactobacillus* spp. are typically considered contaminants when isolated in clinical samples. However, severe infections with *Lactobacillus* spp. may occur. Which patients are at risk, and what is the appropriate therapy for invasive *Lactobacillus* spp. infection?

Who gets severe *Lactobacillus* infections?

Immunocompromised patients and those with severe acute illness are at highest risk for invasive infections due to *Lactobacillus* spp. (e.g. bacteremia).[1] Additionally, probiotic administration has been associated with *Lactobacillus* bacteremia.[2] In a study evaluating 89 cases of *Lactobacillus* bacteremia, malignancy and serious gastrointestinal disorders were significant predictors of mortality, with an odds ratio (OR) of 15.8 (95% CI 4.99 – 50.2).[3] Most patients (82%) were critically ill with ultimately fatal or rapidly fatal underlying disease. A significant proportion of patients (48%) had also previously undergone surgery or an endoscopic procedure.

What are the most common *Lactobacillus* species isolated?

In one study of 85 clinical blood isolates, the most common species isolated was *L. rhamnosus* (54%), followed by *L. fermentum* (14%) and *L. casei* (14%).[4] In another study, among 129 cases of bacteremia, *L. rhamnosus* (32%) and *L. casei* (28%) were the most common species isolated.[5]

What antibiotics are active against *Lactobacillus*?

Penicillin, piperacillin-tazobactam, carbapenems, and clindamycin generally have low MICs and are considered active, though some variability exists depending on species.[6] In patients with endocarditis, combination therapy with penicillin and aminoglycoside has been used.[5] Vancomycin activity varies and some species are intrinsically resistant to vancomycin (see table below).[7] Cephalosporin activity is unreliable.[6] Metronidazole and ciprofloxacin are generally not active.[6]

Vancomycin Susceptible		Vancomycin Resistant	
L. acidophilus	*L. iners*	*L. casei*	*L. rhamnosus*
L. crispatus	*L. johnsonii*	*L. fermentum*	*L. salivarius*
L. gasseri	*L. lactis*	*L. plantarum*	*L. vaginalis*
L. jensenii		*L. reuteri*	*L. zeae*

Key Takeaway: *Lactobacillus* spp. can cause clinically significant infections, and usual treatment includes penicillin or broader-spectrum options, if needed. Cephalosporins are generally unreliable and many species are intrinsically resistant to vancomycin. Although *Lactobacillus* spp are anaerobes, metronidazole should not be used.

References:

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