

## Antibody Production to *S. Aureus* Bone Sialoprotein Binding Protein Reflects Osteomyelitis in Diabetic Foot Ulcers

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*Staphylococcus aureus* isolated from patients suffering from osteomyelitis express Bbp, a cell wall protein, that specifically binds the bone tissue-specific extracellular matrix (ECM) protein bone sialoprotein. We investigated whether patients suffering from *S. aureus* bone infections have an immunological response to Bbp. Recombinant *S. aureus* strain O24 Bbp was used in an ELISA setting to detect anti-Bbp IgG in patient sera. Sera from patients suffering from osteomyelitis, endocarditis, septicemia, septic arthritis and soft tissue infections (155 sera in total) and sera from donors with no ongoing *S. aureus* infection (139 sera in total) were investigated. Levels of anti-Bbp IgG were significantly higher in sera from patients suffering from osteomyelitis than in sera from patients with other staphylococcal infections, non-*S. aureus* infection or other disease. Fifty out of 76 osteomyelitis patients had titers above cut-off, whereas healthy controls lacked reactivity to Bbp. The sensitivity of the Bbp ELISA test in detecting osteitis in diabetic foot ulcers was 76-100%. Titers of Bbp antibodies in soft tissue infection were not raised. Our results support the hypothesis that Bbp plays a role in the localization of staphylococci to bone tissue.

**Abbreviations:** Bbp, bone sialoprotein binding protein; BSP, bone sialoprotein; ELISA, Enzyme linked immunosorbent assay; GST, glutathione-S-transferase; PBS, phosphate buffered saline.