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Paper Poster Session

Bone and prosthetic joint infection

Evaluation of BJI Inoplex test for diagnosis of prosthetic joint infection in one French reference centre

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Background: The diagnosis of prosthetic joint infections (PJI) represents a critical challenge for orthopedic surgeons and infectious disease specialists. The diagnosis of PJI is often delayed because non-invasive assays lack sensitivity and specificity. A novel multiplex immunoassay detecting antibodies against *Staphylococci*, *Propionibacteria* and *Streptococcus agalactiae* was developed.

The Luminex-based assay measures serum IgG against a panel of recombinant purified antigens from *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Staphylococcus lugdunensis*, *Streptococcus agalactiae* and *Propionibacterium acnes*. This non-invasive serological approach should improve the diagnosis of PJI and optimize the care of patients.

Material/methods: We conducted a prospective non-interventional study to evaluate the diagnostic interest of the BJI Inoplex™ test in patients with suspected PJI in association with clinical and biological data in a French reference center.

Patients undergoing revision arthroplasty were included from September 2014 up to March 2015 in one French reference center in compliance with IRB and French regulations. PJI cases were defined microbiologically (≥ 2 intraoperative samples yielding the same microorganism) for confrontation of microbiological and immunoassay data.

Results: 80 patients were eligible for study analyses. 25 patients met the criteria for the indication of the test (patients with prosthesis and signs of infection dating more than three months after joint replacement). Of the 25 patients, 15 had a total hip prosthesis, 9 a total knee prosthesis and 1 an ankle prosthesis. The sensitivity and specificity values of the test were, respectively, 90% and 90% for staphylococci (*S. aureus*, *S. epidermidis*, *S. lugdunensis*). The sensitivity/specificity of *Streptococcus agalactiae* and *Propionibacterium acnes* antigens could not be calculated because of too few patients tested positive in culture to these two bacterial species.

Conclusions: This novel multiplex serological test allows the rapid and non-invasive diagnosis of the most frequent PJI pathogens, showing a good correlation with microbiological culture. It appears to be

a new promising tool in the management of PJI, adding sensitivity to the current serological assays and enhancing the management of patients with PJI.