



Karius® Test for Pathogen Detection in Prosthetic Joint Infections

Poster Session CIV01—Clinical Studies of Adult Infectious Diseases
Sunday | June 23 | 11:00 AM–1:00 PM

Poster CIV-170

Sequencing of Plasma Cell-Free DNA for Pathogen Detection in Prosthetic Joint Infections

I.S. Cohn¹, D.C. Danko², A.P. Echeverria¹, S. Shanaj¹, M.W. Henry¹, A.O. Miller, S.M¹. Goodman, L. Blair³, G. Meshulam-Simon, B.D. Brause¹, D. Hollemon³, D.K. Hong¹, M.B. Cross¹, A. Ahmed³, C.E. Mason², L.T. Donlin¹

(1) Hosp. for Special Surgery, New York, NY (2) Weill Cornell Med., New York, NY (3) Karius, Inc., Redwood, CA

Study Design

Plasma samples from peripheral blood of 25 patients undergoing surgical interventions for suspected prosthetic joint infections (PJI) were tested using the Karius Test. These included 22 culture-positive PJI cases. Joint fluid samples from all patients were also sequenced for intracellular DNA using the MoLYsis Basic5 kit (Molyzym) and BIOstic Bacteremia DNA isolation kit (Qiagen), and standard Illumina sequencing.

Results

- 1. Comparison with culture**—The Karius Test detected the same organism in 13 out of the 22 culture-positive cases with detection of at least one additional organism in 6 cases. Optimizing the analytical pipeline for increased sensitivity identified the PJI microbe in three additional cases.
- 2. Utility for monitoring PJI**—In 5 cases Karius Test results were compared between samples collected before and after surgical and antibiotic treatment. The microbes detected pre-treatment were no longer detected post-treatment.
- 3. Comparison with joint fluid sequencing**—Joint fluid sequencing detected the same organism in 19 out of the 22 culture-positive cases. The Karius Test results aligned with 13 of these cases.