

Prediction of residual disease using F18 FDG PET/CT in patients with staphylococcal implant-associated spine infection requiring long-term suppressive therapy

Thomas Baudry¹, Florent Valour^{1, 2, 3, 4}, Isabelle Morelec¹, Dominique Peyramond^{1, 2}, Christian Chidiac^{1, 2, 3}, Tristan Ferry^{1, 2, 3, 4}, * for the *Lyon BJI Study Group*

¹ Hospices Civils de Lyon, ² Université Claude Bernard Lyon 1,

³ INSERM U851 Pathogénie Bactérienne et Immunité Innée, ⁴ Centre National de Référence des Staphylocoques



SPINEWEEK 2012 **RAI AMSTERDAM** 28 MAY - 1 JUNE



Potential conflict of interest disclosure

- All authors : none



SPINEWEEK 2012 RAI AMSTERDAM 28 MAY - 1 JUNE



Background

- Long-term suppressive antimicrobial therapy is a treatment option in patients with a high risk of relapse during staphylococcal implant-associated bone and joint infection.
- The goal of suppressive treatment is to control clinical manifestations rather than eradicate infection
- However, suppressive therapy is binding for the patients and not always safe



Objective

- **To evaluate prospectively the residual disease** at the site of infection using F18 FDG PET/CT in patients with staphylococcal implant-associated spine infection requiring long-term suppressive therapy.



Methods

- F18 FDG PET/CT in patients with staphylococcal implant-associated spine infection requiring long-term suppressive therapy
- PET/CT was performed 6 weeks to 6 months after the surgical therapy and then during the follow-up (once to four times in a year)
- Persistent residual disease was defined as a SUVmax of infected-spine $>$ SUVmax of non-infected spine (Δ SUVmax+)
- The suppressive therapy was stopped if both SUVmax were similar.



Results (1)

- Five patients (mean age of 54 ± 21 years) with chronic staphylococcal implant-associated spine infection
 - 3 infected with *S. aureus*
 - 1 infected with coagulase-negative staphylococci
 - 1 infected with both
- 4 patients with instrumented posterior lumbar fixation and 1 patient with vertebral cementoplasty

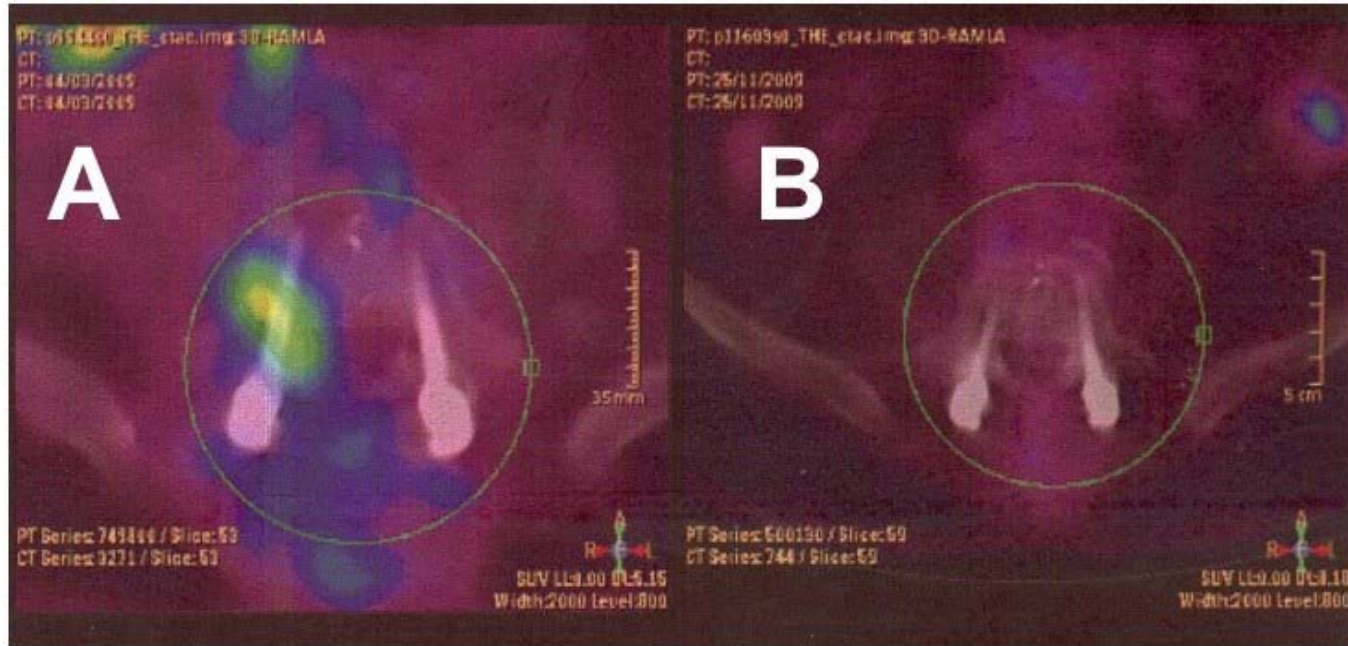


Results (2)

- Surgery (implant retention) was performed in 4 of the 5 patients
- 10 PET/CT were performed
- Similar SUVmax were observed in 3 patients, allowing the discontinuation of the suppressive therapy:
 - 2 patients at 6 month (figure next slide)
 - 1 patient at 12 months,



Figure. F18 FDG PET/CT was still positive in this patient at 3 months (A), but became negative at 6 months (B), allowing the discontinuation of the suppressive antimicrobial therapy



Results (3)

- In patients with treatment discontinuation:
 - No relapse was observed during a follow-up of 18, 23 and 24 months
- Other patients (n=2)
 - Δ SUVmax+ was still observed 9 and 21 months after the initiation of suppressed therapy



Conclusion

- F18 FDG PET/CT may facilitate the discontinuation of long-term suppressive therapy in patients with staphylococcal implant-associated spine infection
- No relapse was observed in patients for whom the antimicrobial therapy was stopped after abnormalities disappearance on F18 FDG PET/CT



The Lyon BJI Study Group

- **Physicians** – Tristan Ferry, Thomas Baudry, Agathe Sénéchal, Thomas Perpoint, André Boibieux, François Biron, Florence Ader, Anissa Bouaziz, Fatiha Daoud, Johanna Lippman, Evelyne Braun, Marie-Paule Vallat, Patrick Mialhes, Christian Chidiac, Dominique Peyramond;
- **Surgeons** – Sébastien Lustig, Guillaume Demey, Philippe Neyret, Jean-Paul Carret, Gualter Vaz, Michel-Henry Fessy, Cédric Barrey;
- **Microbiologists** – Frederic Laurent, François Vandenesch, Jean-Philippe Rasigade;
- **Nuclear Medicine** – Isabelle Morelec, Emmanuel Deshayes, Marc Janier, Francesco Giammarile;
- **PK/PD specialists** – Michel Tod, Marie-Claude Gagnieu, Sylvain Goutelle.

