ePO41 Infection of spinal cord stimulation devices: Remove or Retain?

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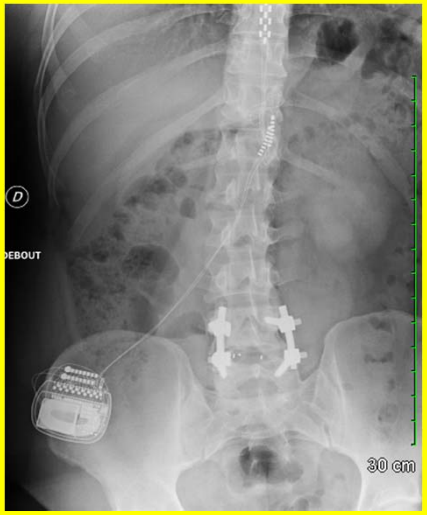
Introduction

Implantable device such spinal cord stimulation systems are increasingly used as they proved successful for chronic neuropathic radicular pain treatment. Although usually considered as safe, there is no precise data on the risk of infection related to these devices. Using data from the ESTIMET study, a multicentre randomized controlled trial comparing 2 different devices, we prospectively described device's infections in a cohort of patients with spinal cord stimulation implantable systems.

Materials and Methods

One hundred and fifteen patients were included in the ESTIMET study and benefited for a spinal cord stimulation system. Implantation was a 2 steps procedure starting with the lead insertion in the epidural space followed by a 7 days trial period where the leads were temporarily exposed in order to evaluate the efficiency of the procedure with an external generator. In a second stage, the generator was fully implanted after the 7 days trial period. All the patients benefited from intravenous antibiotic prophylaxis by 2g of cefazolin (2g) administered within one hour prior to skin incision. Investigators clinically evaluated patients after one week, one, three, six and twelve months, and on request. Noticeably, one can remove one part of the device (e.g. the generator) without removing the other one.

Generator



Intra spinal lead

Results

Seven patients (6.1%) presented an infection after a median (min-max) time of 11 days (5-92). Two patients were explanted from the whole device (generator + lead), 2 patients were partially explanted (generator alone) while 3 patients benefited from a conservative treatment.
Infection was documented for 6 patients (4 Methicillin sensitive *Staphylococcus aureus*, 1 Methicillin resistant *Staphylococcus aureus*, 1 negative coagulase *Staphylococci*). The prevalence of Staphylococcus aureus methicillin- resistant (among all Staphylococci aureus) at the university hospital of Poitiers is 22%.
Patients benefited from adapted antibiotics treatment for 4 to 6 weeks without relapse whether they were explanted or not except for one who was initially partially explanted, then fully explanted because of relapse after antibiotics discontinuation.
Neither C-reactive protein nor Procalcitonin could be related to infection diagnosis nor cure of infection.
Most of the infection occurred within a month (6/7). Infection successfully managed without explantation occurred within 2 weeks.
The median follow-up was 6 months.

n°	Infection type (CDC)	Timing	Explantation	Pathogens	Antibiotic
1	Superficial incisional, after lead implantation and before generator implantation	7	NO (and the generator has been implanted secondarily without infection)	SAMS	Tazocillin IV + Zyvox PO (5 d), Rifampin PO + Ofloxacin PO (41 d)
2	Deep incisional, after lead implantation, then after generator implantation	7	YES, explantation of the whole device	SAMS	Tazocillin IV + Zyvoxid PO (6 d), Rifampin PO + Ofloxacin PO (30 d)
3	Superficial incisional	15	NO	Multiple coagulase negative staphylococcus	Tazocillin IV + Cubicin IV (7 d), Zyvox PO (8 d)
4	Deep incisional	92	YES, explantation of the generator but not the lead	SAMS	Claforan IV + Gentamicin(8 d), then Clamoxyl
5	Superficial incisional	5	YES, explantation of the generator but not the lead	SAMS	Pyostacin, then Levofloxacin + Rifampin (15 d)
6	Superficial incisional	30	YES, explantation of the whole device	SAMS	Pyostacine PO 6 weeks, Vancomicin 1 w, Zyvox 10d
7	Deep incisional	5	NO	SAMS	Vancomicin (3 d), Coamoxiclav (6w)

Conclusions

This is the first study to report prospectively prevalence and description of infection after implantation of spinal cord stimulation device. Although it needs to be confirmed by larger cohort, our results suggest that conservative treatment is an option to consider.
Nonetheless, principles usually applied for device infection such as conservative treatment for recently implanted device seems applicable (Osmon et al CID 2013).
Moreover, following patients from a prospective trial offers exhaustive data and will limit bias in our conclusion.

References

Diagnosis and management of prosthetic joint infection: clinical practice guidelines by the IDSA. Osmon DR, Berbari EF, Berendt AR, Lew D, Zimmerli W, Steckelberg JM, Rao N, Hanssen A, Wilson WR. Clin Infect Dis. 2013 Jan;56(1):e1-e25.