No Exit: Long-term Meropenem usage in S-OPAT

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Case Presentation

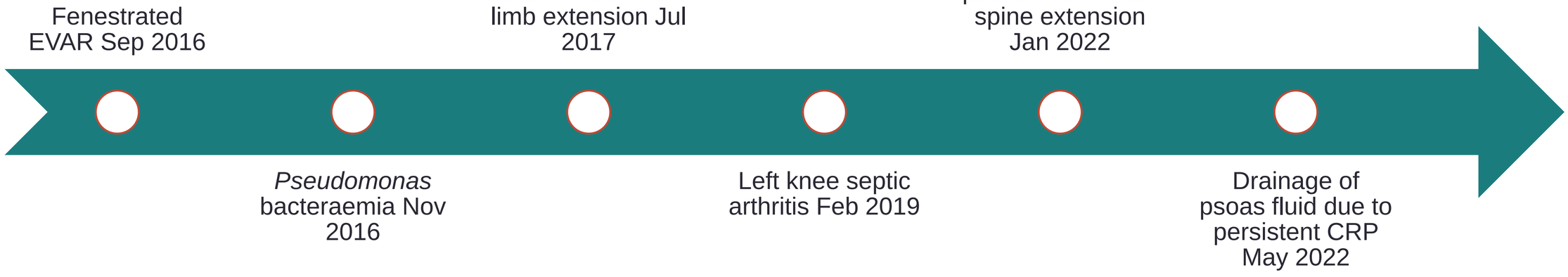
We present a 77 year old man with a chronic Pseudomonas aeruginosa infection of an EVAR. In 2016 at age 71 he underwent a fenestrated EVAR for an abdominal aortic aneurysm. His past medical history included PCI in June 2016 (pre-EVAR, non obstructive disease), rheumatoid arthritis, hypertension, hypercholesterolaemia and prostheses in his right knee and left hip.

Two months later he was admitted to hospital with a febrile illness. He was found to be blood culture positive for a piperacillin-tazobactam intermediate P. aeruginosa. At this time there was clinical suspicion for infected EVAR, although imaging including a white cell scan were negative. The decision was made to continue ciprofloxacin 750mg BD and metronidazole 400mg TDS for 3 months followed by ciprofloxacin 750mg BD as indefinite prophylaxis. After 8 months ciprofloxacin was reduced to 250mg BD PO due to tendonitis.

In February 2019 he developed septic arthritis of his native knee joint with two P. aeruginosa subpopulations, one of which was ciprofloxacin resistant. Initial treatment with Ceftazidime led to a static clinical and biochemical picture. Ultimately antibiotics were changed to Meropenem for 12/52, 10 weeks of this was completed through S-OPAT. Following this Ciprofloxacin was reinstated at a 500mg BD dose as the only possible option, clinicians were aware that this would not cover the resistant population isolated from the left knee.

His treatment course and emergence of resistance is summarised in Figure 1.

Figure 1: Timeline



***Pseudomonas* sensitivity pattern**	Tazocin Intermediate	-	1 pansensitive population, 1 R to Ciprofloxacin, Tazocin and Aztreonam	3 subpopulations, all Tazocin and Ceftazidime S, Ciprofloxacin R, 1 Gentamicin R	4 subpopulations, all retain Meropenem sensitivity
IV antibiotics induction	IV Ceftazidime	-	IV Ceftazidime followed by IV Meropenem	IV Ceftazidime x 8/52	IV Meropenem 1g TDS followed by 2g BD
Oral stepdown	Ciprofloxacin 750mg BD	Ciprofloxacin 250mg BD	Ciprofloxacin 500mg BD	-	-
OPAT	C-OPAT	C-OPAT	S-OPAT followed by C-OPAT	S-OPAT	S-OPAT

Discussion

Palliative OPAT is allowed based on the 2019 BSAC OPAT guidelines.[1] Palliative OPAT represents only 0.6% of total OPAT patients, yet 8.6% of bed days saved in one study.[2] Emergence of antimicrobial resistance (AMR) in Gram positive and Gram negative organisms has been described in patients on palliative OPAT for aortic graft infections.[3] In the UK carbapenems are some of the most commonly used antibiotics on OPAT, with Ertapenem and Meropenem the 3rd and 7th most commonly used on OPAT.[4] This highlights the ongoing problem of AMR, as well as the possibility for environmental antibiotic contamination through OPAT.

We invite readers to consider how they would approach this patient. Would you continue Meropenem via S-OPAT indefinitely or pulse antibiotics 6 weeks on and 6 weeks off? We are pursuing phage therapy and there is one previously reported cure of a Pseudomonas graft infection using this treatment.[5]

References

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