Fusobacterium necrophorum in an Abdominal Aortic Aneurysm, Treated by Once Daily Ertapenem

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Abstract

Keywords

- abdominal aortic aneurysm
- aneurysm
- C-reactive protein
- infection
- mycotic aneurysm
- risk factors
- repair

Inflammatory aneurysms may make up a small percentage of the total number of abdominal aortic aneurysms, but they present their own unique challenges. We present a case of a 65-year-old man whose aneurysm was found to be colonized by *Fusobacterium necrophorum*.

Inflammatory aneurysms account for 5 to 10% of all abdominal aortic aneurysms.¹ The thrombus can become infected, making management slightly more complex. We believe that this is first recorded case of *Fusobacterium necrophorum* being implicated in an inflammatory aortic aneurysm.

Case Report

A 68-year-old man presented with right-sided back and groin pain, vomiting, night sweats, and rigors. He was febrile, spiking temperatures of up to 38°C. Inflammatory markers included a white cell count of $18.2 \times 10^9/L$ and C-reactive protein of 359 mg/L. Computed tomography (CT) scan of abdomen revealed a 10 cm by 9 cm infrarenal, inflammatory aneurysm, extending to and including the bifurcation (►Fig. 1). The aortic wall was thickened and ill-defined with stranding in the adjacent retroperitoneum. At surgery, a malodorous smell was noted on opening the aneurysm sac. Repair was performed with a silver impregnated graft coated with rifampicin. There were no intraoperative complications.

Postoperatively he had a 6-week course of intravenous antibiotics, commencing with Tazocin (Wyeth Pharmaceuticals, Madison, NJ) doses, followed by ciprofloxacin, and then ertapenem. The antibiotics were changed on the advice of the infectious diseases specialists. Culture of the intramural

thrombus was positive for the anaerobe *F. necrophorum*. He improved with the antibiotic therapy and was discharged home to complete the course in the community. Postoperatively he recovered well having no fever or rigors. All postoperative blood cultures were negative for any organisms. Surveillance CT scan performed 3 months following surgery showed a thick rim of enhancing tissue surrounding the sac, but no fluid or air or significant adjacent inflammatory change to suggest definite infection. A further CT scan performed 5 months later revealed a slight decrease in the periaortic inflammation, and still no evidence of infection (►Fig. 2).

Discussion

Fusobacterium necrophorum is a nonspore forming anaerobe, capable of causing monomicrobial infections.² It is implicated in less than 1% of bacteremias (usually postanginal sepsis), and is more commonly associated with head and neck infections such as Lemierre disease or intra-abdominal sepsis.³ In addition to infections arising from the head and neck, *F. necrophorum* has been shown to spread from the gastrointestinal and female genitourinary tract.

A comprehensive review of human infections caused by *F. necrophorum* found 251 cases where this organism had been isolated since 1970 (►Table 1).⁴

Fig. 1 Computed tomography of abdominal aortic aneurysm. Arrow: abdominal aortic aneurysm with surrounding inflammatory stranding.

Fig. 2 Surveillance computed tomography of repaired abdominal aortic aneurysm. Arrow: resolving inflammatory stranding.

Despite most cases arising in the head and neck, the ability of *F. necrophorum* to cause widespread systemic upset is well documented. This can occur as either bacteremia (necrobacillosis) or metastatic abscess formation to many diverse sites; most notably the lung or pleura. The proposed mechanism of is inflammation from the throat, secondary to oropharyngeal infection, allowing the organism to penetrate the deep neck spaces and also gain access to the circulation. This allows *F. necrophorum* to cause the typical findings in Lemierre disease and cause septicemia.⁵ There is minimal evidence that *F. necrophorum* is part of the normal flora and it can be acquired in a nosocomial fashion.⁴

Table 1 Summary of sources of *Fusobacterium necrophorum* infections

Source	Number of cases	Percentage (%)
Throat	179	71
Ear	32	13
Sinus	8	3
Dental	4	2
Other	4	2
Unclear	24	10

Our patient reported recent dental work approximately 1 month before admission. This is of uncertain significance given the long natural history of most aortic aneurysms. There is some evidence that oral trauma can facilitate infection.⁵ On the basis of the frequency of primary sources it is likely that our patient's infection arose outside of the aneurysm, most likely in the head and neck, and that the infection of the aneurysm was a metastatic event. It is unclear how much the *F. necrophorum* contributed to the development and extension of the aneurysm or whether it opportunistically infected the thrombus within the aneurysm.

Conclusion

Management of infected aortic aneurysms is complicated by the nature of the organism infecting the thrombus, particularly when it is a rare organism. The infection with *F. necrophorum* in this particular case was unusual, but as it was identified and treated adequately, the patient made a full recovery.

Conflict of Interest

None

References

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