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Aortic stent infection in etiology of fever of unknown origin in a geriatric patient

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ABSTRACT

Objective: Aortic stent graft infections (ASGI) are associated with significant morbidity and mortality. ASGI may exist as a seldom cause of fever. **Case report:** A 67 year–old male patient presented with fever, fatigue, chest pain and night sweats for a week. He had no infection sign except 3/6 systolic murmur. He admitted to the clinic with a prediagnosis of infective endocarditis. Combination therapy with ceftriaxon (2 g/day) + vancomycine (2 g/day) was administered. No vegetation was seen on neither transthoracic nor transesophageal ecocardiography. Methicillin–sensitive *Staphylococcus aureus* (MSSA) yielded in blood cultures. Antibiotherapy was changed to sulbactam–ampicilline (8 g/day). Then, we learned that the patient has an aortic stent placed due to aortic dissection. Contrast enhancement was detected in magnetic resonance imaging. Cardiovascular surgeons decided not to remove the stent because of increased mortality; therefore antimicrobial therapy was extended to 4 weeks. But soon after discharge from the hospital, the patient re–admitted with fever. Sulbactam–ampicilline was begun, and MSSA yielded in blood cultures again. Antibiotherapy was continued for an additional 6 weeks. No recurrent infection occurred during 6 months of follow–up. **Conclusion:** ASGI could be one of the causes of fever of unknown origin (FUO). Despite the recommended treatment of ASGI being surgery, long–term conservative antimicrobial treatment may be performed successfully in patients with high surgical risk.

1. Introduction

Fever of unknown origin (FUO) is a medical condition of all age groups. It should be considered that the course of disease may differ, when searching for FUO etiology in geriatric population. Several diseases and treatments of geriatric population may cause fever as well the classical FUO causes. Stent infection is one of those diseases that rarely presents with fever. In geriatric population, particularly males, aortic aneurysm and dissections are common associated with atherosclerosis[1]. Vascular graft infections after aortic aneurysm repair surgery are serious complications that may present as significant morbidity and mortality causes[2]. Although frequency of endograft infections is less than 1%, mortality is around 25%[3].

2. Case report

A 67 year–old male patient presented with fever lasted more than one month, fatigue, chest pain and night sweats admitted to our unit. He was diagnosed with sinusitis and discharged with a cefuroxime axetil prescription with no benefit. He had no infection sign except 3/6 systolic murmur. On his blood smear, white blood cell (WBC) count was 9.000/mm³, hemoglobin level 12.2 g/dL, thrombocyte count 190.000/mm³, erythrocyte sedimentation rate (ESR) 77 mm/h and C–reactive protein (CRP) level 20.4 mg/dL. He was hospitalized with a pre–diagnosis of infective endocarditis. Combination therapy with ceftriaxon (2 g/day) + vancomycine (2 g/day) was administered after 3 sets of hemoculture were taken. No vegetation was seen upon neither transthoracic nor transesophageal ecocardiography. Methicillin–sensitive *Staphylococcus aureus* (MSSA) yielded in blood cultures. Antibiotherapy was changed to sulbactam–ampicilline (8 g/day). Fever started to respond on the fourth day of treatment. Then we learned that the patient had aortic stent placed due to aortic dissection seven years ago. Contrast

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enhancement was detected in magnetic resonance imaging. Cardiovascular surgeons decided not to remove the stent because of increased risk of mortality, and antimicrobial therapy was extended to 4 weeks. But soon after discharge from the hospital, the patient re-admitted with fever and was diagnosed as recurrent stent infection since a new infection was not found upon medical examination. On his blood smear WBC was 8.400/mm³, hemoglobin level 11.3 g/dL, thrombocyte count 186.000/mm³, ESR 82 mm/h and CRP level 19.6 mg/dL. Sulbactam–ampicilline combination was begun, and MSSA yielded in blood cultures again. Antibiotherapy was continued for an additional 6 weeks. No recurrent infection occurred during the 6 months follow-up period.

3. Discussion

FUO was first determined as “fever above 38.3 °C in various measurements that lasts more than 3 weeks and unable to find its cause during one week of hospitalization” by Petersdorf and Beeson in 1961. In 1991, Durack and Street had categorized FUO in 4 groups; classical, nosocomial, immunosuppressive and HIV-related. This was because of the different spectrum and clinical approaches of the underlying diseases[4]. It is agreeable that “geriatric FUO” may be categorized separately when considering the concomitant diseases.

There are different infectious and non-infectious causes of fever. While intra-abdominal abscess, endocarditis and tuberculosis are the most common reasons, other etiologies consist of neoplasia and multisystem collagen vascular diseases. Around 30% of the cases remain undiagnosed[5]. Unlike young adults, most of the time common diseases are seen in geriatric population and 87%–95% of them can be diagnosed (Table 1)[6].

Table 1

Comparison of diagnoses in geriatric patients and young adults with fever of unknown origin.

	Geriatric (n=47)	Young adults (n=152)
Diagnosis	n (%)	
Infection (%)	12 (25)	33 (21)
Abscess	2	6
Endocarditis	1	2
Tuberculosis	6	4
Viral infection	1	8
Multisystem disease	15 (31)	27 (17)
Neoplasia	6 (12)	8 (5)
Rare Disease	5 (10)	24 (15)
Fever related to medication	3 (6)	3 (1)
Habitual hyperthermia	0	5 (3)
Artificial	0	7 (4)
Unable to diagnose	6 (12)	45 (29)

Most of the time, non-infectious diseases including temporal arteritis are the reasons of FUO in geriatric population. Infectious causes such as intra-abdominal abscess, endocarditis, spondylodiscitis are less common. Prosthesis, implantable devices, stents are rarely reported as

infection sources that cause fever[5,6].

Surgery is the standard treatment option for aortic aneurism however endovascular stent and graft treatments are less invasive options for atherosclerotic, infectious, inflammatory and dissecting aortic aneurisms, trans-sections and pseudo-aneurisms. Considering lower morbidity and mortality and shorter hospitalization, these options are more preferable for high risk geriatric population[2]. Rarely seen endograft infections are considered as negligible and follow-up imaging procedures are skipped[6]. Factors such as short follow-up period after surgery, reduced expected survival rates of the patients due to concomitant diseases, small number of studies of stent infections play role for low incidence of endograft infections[7].

The infection may access to aortic rupture and cause mortal complications when remains untreated. Infectious graft should be removed and exchanged with autologous material or extra-anatomical bypass revascularization should be done[3–7]. In a small study, there was no difference determined in terms of mortality between conservative and surgical approaches[3].

Despite the recommended treatment of ASGI being surgery, long-term conservative antimicrobial treatment may be performed successfully in patients with high surgical risk.

Conflict of interest statement

We declare that we have no conflict of interest.

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