

When Thigh Pain is Not What It Seems: A Case of Infective Endocarditis

Muhammad Abu arisha* and Yishai Levi

Department of Rambam Health Care Campus, Haifa, ISRAEL

*Corresponding author: Muhammad Abu Arisha, Department of Internal Medicine, Rambam Health Care Campus, Haifa, ISRAEL, Tel: +972502062001; E-mail: m_abu-arisha@rambam.health.gov.il

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Introduction

Infective endocarditis (IE) is a disease characterized by high morbidity and mortality, highest rates of infection are observed among patients with prosthetic valves. The classical clinical presentation includes fever in >90% of cases and clinical evidence of IE was found less often in elderly patients than in younger patients: in particular, vascular and immune-mediated phenomena, such as embolic events, splenomegaly, Osler nodes, Roth spots, Janeway lesions and conjunctival hemorrhages, were all observed less commonly among elderly IE patients [1]. The use of valve prostheses, chronic instrumentation and implantable devices has increased the incidence of IE. We present an old patient who developed IE of native mitral valve, two years after Transcatheter Aortic Valve Implantation (TAVI). Clinical presentation of the disease was characterized by thigh pain, fatigue and normal body temperature with no clinical signs or evidence that can raise the suspicion of IE.

Case presentation

A very active 83-year-old, kibbutz citizen, presented with one-week history of bilateral thigh-pain and fatigue that limited his daily activities. He denied history of recent injury. Medical history included well controlled hypertension, Type 2 Diabetes controlled by diet and metformin, obesity (BMI 33 Kg/m²) and benign prostatic hyperplasia. Surgical history included TAVI by transfemoral approach two years previously due to severe aortic stenosis. Bilateral total hip replacement was successfully performed 17 years previously.

On admission, his blood pressure was 137/68 mmHg; pulse rate: 92/min regular; respiratory rate: 14/min; oral temperature was 37.2°C. Physical examination revealed mild lower extremity pitting edema. He had neither jugular venous pressure elevation nor hepatjugular reflux. On cardiac auscultation, the first and second heart sounds were normal; third or fourth heart sounds were not present. There were no lungs rales or wheezing.

The WBC count was 20,000/μL with 86.7% neutrophils; with a hemoglobin level of 12.4 g/dL; an elevated ESR (100 mm/hr); and high C-Reactive Protein (CRP) concentration of 250 mg/L. Creatinine (0.83 mg/dL), electrolytes and liver function tests were all normal.

He had normal sinus rhythm. Cardiomegaly, without pulmonary venous congestion was evident on chest x-ray. Two months earlier, left ventricular ejection fraction was 45% with normal morphology and function of aortic prosthesis as demonstrated by a transthoracic echocardiogram. Orthopedic evaluation did not suggest pathologic findings based on X-ray, bone scintigraphy and left hip joint aspiration.

On the second day of admission, blood cultures from two sites grew *Streptococcus Pasteurianus* (*S.Bovis*) highly sensitive to Penicillin. Antibiotic therapy was initiated accordingly. With the suspicion of IE

of the aortic implant, transesophageal echocardiogram (TEE) was performed and surprisingly revealed multiple mobile vegetations on atrial side of mitral valve annulus with mild mitral valve regurgitation. The morphology and function of the aortic prosthesis were absolutely normal. Good clinical and laboratory response were seen after two weeks of treatment. Repeated blood cultures 10 days after treatment initiation were negative. At the 3rd week of hospital stay, left heart failure requiring high dose of parenteral diuretics developed. Electrocardiogram showed normal sinus rhythm without abnormalities. Troponin serum concentration was 0.3ng/ml (normal range 0.00–0.028 ng/mL). TEE demonstrated a ruptured posterior tear of the mitral valve with severe mitral regurgitation that was not present in the first TEE, 17 days previously. A surgical mitral valve replacement (MVR) was planned. Coronary angiogram showed complete obstruction of the right coronary artery requiring embolic debris aspiration. The mitral valve was successfully replaced by a biological valve. Post-operatively, multi-organ failure developed and the patient died at the 2nd post-operative day (22nd day from admission).

Post-mortem examination revealed mitral valve damage with multiple vegetations, aortic prosthesis with no abnormalities, normal and open coronary arteries and ischemia of small intestine.

Discussion

IE is a known complication of heart valves replacement. TAVI has emerged as an alternative treatment for aortic stenosis in patients who were considered to have a high or prohibitive surgical risk. Elderly patients are a population at high risk for IE. Multiple factors account for the increase in incidence in elderly patients, such as the high prevalence of undiagnosed degenerative valve disease and the increased use of invasive procedures and implanted medical devices. These factors could also influence the outcome of elderly patients with IE. In a large prospective cohort study [1,2] on 1056 elderly patients (>65 years old) with diagnosed IE, fever was present in 94.6% of cases. *Staphylococcus aureus* was the most common causative pathogen, with a higher prevalence of coagulase-negative *Staphylococci*, *Enterococci*, and *Streptococcus bovis* and lower rates of *streptococci viridans* group. *Enterococci* and *S bovis* were 2 to 3 times more prevalent, whereas viridans group were consistently less prevalent among elderly patients with IE. The study showed a higher rate of in-hospital death (24.9%) among elderly patients. In the other hand, two large studies showed as in other studies that IE in the elderly patients may lack important key signs, such as cardiac murmur, systemic embolic events, but age was not a significant predictor of mortality for elderly patients with IE [3,4].

Searching the literature, there are studies on TAVI and post-operative outcomes. On a study from on 877 patients with an average age of 81.7 ± 7.4 years, the mortality rate two years after the procedure was below 25%, there was no mention of IE2. In a study on 179

patients after TAVI with an average age of 83.1 ± 8.6 years, the mortality rate was below 30% and the incidence of IE was 0.6% after one year [5].

In another study on 7,944 patients, with an average age of 79 ± 8 years, the incidence of IE was 0.50% within the first year post-TAVI. The most frequent causal microorganisms were coagulase-negative staphylococci (24%), followed by *Staphylococcus aureus* (21%) and *Enterococci* (21%). Vegetations were present in 77% of patients (transcatheter valve leaflets: 39%, stent frame: 17%, mitral valve: 21%). At least one complication of IE occurred in 87% of patients (heart failure in 68%). The in-hospital mortality rate was 47.2% and increased up to 66% at 1-year follow-up. IE complications such as heart failure or septic shock were associated with increased in-hospital mortality [6].

Conclusion

This communication illustrates the old “red herring” proverb used in case when something else is distracting from the relevant information. Thigh pain with previous hip replacement in an afebrile patient was unexpectedly diagnosed as IE. Based on the literature and on the disease course of this patient, it appears that IE is uncommon in the TAVI site. Our patient re-emphasizes the “unusual” clinical

presentation of IE in the elderly and the high fatality rate in old patients according to previous studies.

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