



CASE REPORT

A Case of Acute Aortic Failure and Cerebral Infarcts due to Infective Endocarditis in a Patient Addict to Fentanyl and Alcohol-Management and Treatment

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Abstract

Infective endocarditis (IE) is one of the cardiac inflammation diseases with high mortality and morbidity mainly affects the inner liner of the endocardium and the valves. The majority of the infective endocarditis is caused by infectious agents [1].

The incidence of IE is around 2-10/100000 and increases in elders up to 20/100000 per year [1]. I.V drug abusers are more likely to have IE usually caused by single agent and mostly affect Tricuspid valve. Polymicrobial IE is more rare and associated with high mortality up to 30% [2]. Addicted persons to heroin, cocaine, fentanyl and prescription opioids (Oxycodone, Morphine, and Hydrocodone) are more likely to have IE [3].

Here in our case, we had a patient with IE associated with multiple cerebral hemorrhagic and infarct areas, brain abscess, pleural effusion, ARDS (Acute respiratory distress syndrome) and bicytopenia, with history of one attack pancreatitis and addiction to fentanyl and alcohol.

When medical treatment becomes insufficient, surgery should take place in the management, but the question is when to take the decision of surgery and what type of valves should be implanted. In this case we preferred to use bioprosthetic valve due to the patient's characteristics and co-morbidities.

Keywords

Infective endocarditis (IE), Intensive care unit (ICU), Acute respiratory distress syndrome (ARDS), Bioprosthetic valve, Addiction, Fentanyl, Cerebral hemorrhage, Aortic valve, Computed tomography scan (CT-Scan)

Case Presentation

A 43-year-old male patient, who had been admitted to our cardiovascular intensive care unit (ICU) from an outer medical center, unconscious, intubated with left hemiplegia.

According to the patients past history; he was known to be addicted to alcohol, I.V drugs (fentanyl) and smoking with history of one attack of pancreatitis and no history of surgical operations or chronic illness.

Two weeks prior to our hospital admission, he was admitted to an outer medical center with chief complaint of unconsciousness and left hemiplegia. Echocardiography was done and showed aortic valve vegetation. Patient developed high grade fever and I.V antibiotic treatment (Meropenem, Cephazoline and Vancomycin) were started as recommended by infectious disease department as a case of infective endocarditis.

In our hospital, to avoid the possible complications of long term transtracheal intubation, tracheostomy was achieved by chest surgeons in our hospital. When the patient was admitted to our hospital he was found to have gluteal skin rash which treated as a case of candidiasis by zalain cream as advised by dermatologists. Also he was found to have signs of thrombophlebitis on his left forearm.

Echocardiography was done again and showed 4 degree aortic insufficiency, 2 degree mitral insuf-

ficiency and 1 degree tricuspid insufficiency, also a brain CT-Scan was done and revealed that there were multiple areas of hemorrhage and infarcts in both cerebrum and cerebellum bases, while thoracic CT-Scan showed moderate bilateral pleural effusion and a lymph node in mediastinum at the right side of trachea associated with an ice-glass shape consolidation located centrally at both lung parenchyma which diagnosed as a case of ARDS.

During follow up period in ICU, patient developed attacks of agitation due to addiction to I.V drugs. Diazepam, norodol and talinat were started as described by our anesthesiologists and psychiatrists; later on talinat was replaced by fentanyl. On the following days, those medications were decreased gradually according to patient's situation while mannitol and keppra infusion were continued.

Later on, he started to have refractory fever, culture was taken from his respiratory secretion and showed growth of *Corynebacterium* spp, immediately the antibiotics were changed to cephapime, linezolid and flukonazol as recommended by our infectious disease clinic in our hospital.

Also, blood investigations showed Bicytopenia (thrombocytopenia and leukocytopenia) which suggested to be a result of the antibiotics. K-vitamin was started as recommended by our hematologists. Physiotherapy Sessions were also started in ICU.

After one week of admission, diffusion brain MR imaging was done and revealed that there were multiple early stage of abscess formations which the biggest one was about 20 × 10 mm in the right frontoparietal region. Both cerebellar hemispheres mainly right side had late subacute bleeding areas side by side with subacute infarct areas extended to insular cortex of right frontotemporal region and to left frontoparietal region. Neurosurgeons were consulted and the decision was to continue on medical treatment with no need for surgery.

Lungs and mediastinal MRI showed a necrotic tissue and superposed abscess? Pulmonologists were consulted too and advised to add clindamycin.

A new echocardiography done and showed a tear in the non-coronary cuspid (NCC) of the aortic valve and a fragile construction in the lumen extending into ventricle from time to time, of about 15 mm long. The echocardiographer commented that it was of possible vegetation, or rupture of NCC?

On 21 day of the admission to our department and 35 day from the start of the CVA, while patients refractory fever and agitation attacks had been regressed, the patient was taken to operation theatre and bioprosthetic aortic valve was implanted successfully.

Postoperatively, during ICU follow up period, seda-

tive medications were stopped gradually and tracheostomy was closed.

Patient continued his medication and rehabilitation program in the floor, where motor function of left upper extremity returned back. On 13 day of the operation, he was discharged.

Discussion

Among the causes of IE, the drug abuse is considered as one of the most causes that associated with high mortality and morbidity [2]. I.V drug abuse IE usually affects tricuspid valve, but mitral and aortic valves can be affected too. When aortic valve has been affected acute aortic failure can be occurred as well as pulmonary oedema and cerebral embolism which can be fatal. Ampiric antibiotic treatment and supportive medication should be started as soon as possible [4].

Surgical intervention should not be delayed when there is no response to the medical treatment, and in complicated cases or with refractory heart failure [4].

In our case the patient was addicted to fentanyl and alcohol. When he was admitted to our department there were signs of thrombophlebitis on his left forearm. Fentanyl is a synthetic opiate pain reliever that is used for severe pains. It is more potent than morphine by 100 times. Persons who are addicted to fentanyl usually develop weakness, muscle stiffness, dizziness, sleepiness, slurred speech and altered heart rate [5].

Our patient had been admitted to our department with left sided hemiplegia and he was unconscious on ventilator, later on he developed attacks of refractory fever and he was agitated from time to time. Medication was to be modified according to cultures results and complications appeared later. Repeat investigations should have taken place in patients follow up to notice if there is regression of the disease or there are new complications needed to be managed.

Bicytopenia was one of multiple challenges we were face to face with, also ARDS and brain infarcts, absces are other samples of what be possible to suffer during such cases.

Decision and timing of operation have to be the corner stone in treating such complicated cases of IE side by side with proper antibiotics and supportive medications. Also the decision to use mechanical or biological valve may be significant factor that will affect the prognoses and survive of those patients.

In fact, in our case, we preferred to operate our patient after we had controlled the alleviated infection to avoid the high mortality risk of the operation but we kept in mind that if the patient's situation was to go worse we were to operate him urgently. On the other hand, we choose the biologic valve in-

spite there are a lot of studies showed there is no significant difference in the both valves, even some of them showed the superiority of mechanical valve to bioprosthesis. We believe that the best choice of the type of the valves is depending on the patient's characteristics and comorbidities [6].

In a study done for the AEPEI study group, 167 patients with IE were taken into study to evaluate the association between the type of implanted valve and 5-year mortality by the use of an adjusted Cox model. 31 (18.6%) patients with IE were operated by implanting aortic bioprosthetic valves while 27 (16.2) patients had homografts and 109 (65.2%) had mechanical prosthesis. 5-year mortality risk didn't differ between patients with homografts and those with mechanical prosthesis ($p = 0.18$), but the survival seemed to be higher in the mechanical valves than those with bioprosthesis ones ($p = 0.029$) [6].

On the other hand, another study showed that patient's characteristics seemed to be one of the most important factors in choosing the valve type such as the age at operation time. Bioprosthesis are usually used in elder patients or in young patients with co-morbidities [7].

Moon, et al. found that the reoperation rate in mechanical implanted valves is higher than those of bioprosthesis in patients with IE (74% vs. 56% at 10 years and 74% vs. 22% at 15 years) [8].

Moreover, Sweeney, et al. suggested that the difference in mortality between treatment groups may be due to a higher resistance to clinically evident reinfection and reoperation of the mechanical valve, whereas the more fragile bioprosthetic valves are more likely to fail in an actively infected bed [9].

We preferred to implant a bioprosthetic valves in this case, depending on our experience, patient's characteristics and patients comorbidities.

Conclusion

The aortic valve is the most common infected site in IE, accounting for approximately 40-67% of the total infected sites [10]. In I.V drug induced IE, tricuspid valve is the most infected site (2), but in our case the patient had IE induced by I.V drug and the aortic valve had been affected mainly.

Proper medical treatment followed by surgery could survive the patient. Bioprosthetic valves were our choice for the aortic valve replacement depending on our experience, patient's characteristics and co-morbidities. In our opinion the timing of operation should be decided well and the patients with IE and comorbidities are better to be treated with bioprosthetic valves.

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