Mitral valve endocarditis due to *Staphylococcus capitis* in a very old woman

Un caso di endocardite della valvola mitrale da *Staphylococcus capitis* in donna anziana

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La presentazione con sintomi neurologici di una endocardite da *Staphylococcus capitis* è rara e correlata ad una prognosi infausta. Riportiamo un caso di ischemia cerebrale dovuto ad una endocardite della valvola mitrale in una donna anziana con esito fatale, nonostante una terapia appropriata.

Parole chiave: Complicazioni neurologiche • Endocardite • *Staphylococcus capitis* • Anziano

Introduction

Infective endocarditis is most frequent in over 65 years old subjects, often due to Streptococci and Staphylococci 1. Among uncommon pathogens, only twelve cases of natural valve endocarditis by *Staphylococcus capitis* with mean age of seventy years have been described (the younger patient is 29 and the oldest 80 years old) 2-3. Among these cases, six are mitralic, four aortic and one both 2. The infection of mitral valve seems to increase the risk of cerebrovascular complications such as stroke described in 20-40% cases 4. In particular the migration of a fragment or the whole vegetation in the cerebral circulation are the most important causes of neurological events 5. Even if the neurological complications by infective endocarditis are common 4, only one patient with *Staphylococcus capitis* infection and neurological complications has been described, which died 6. Among risk factors for neurological events, one of the most important is the size of vegetation. In fact, a vegetation > 10 mm in diameter predisposes for neurological embolization, in particular in the middle cerebral artery territory. Neurological complications are linked to disability and increase death rate 4. Finally, among *Staphylococcus capitis* endocarditis, death is occasionally reported: in fact, only two patients died, one for neurological complications 6 and one for multi-organ failure 7.
We report the oldest case of giant mitral endocarditis in literature with massive cerebral embolization and consequent death despite treatment with appropriate antibiotics.

Case report

An 85 years-old woman with a medical history of hypertension, vascular dementia with moderate-severe cognitive impairment, remote ischemic stroke in 2009 and mitral prolapse, was hospitalized in our clinic (Geriatric Clinic, University of Padova) with a few hours history of slurred speech and left gait disturbance. The patient did not have diplopia or vision problems. A cerebral CT-scan evidenced the presence of an occipital right hypodensity area. Vital parameters were normal (temperature was 36°C, pulse was 90, blood pressure 130/80) and on cardiac auscultation a IV-V holosystolic murmur at the apex radiating to the axilla was felt. Neurological examination confirmed the objectivity of admission. Chest X ray, ECG and troponine were negative for cardiac acute pathology. A 48h cerebral TC was performed and it was unchanged by the first.

In the 4th day of hospitalization the patient had a febrile peak (38.8°C) and blood cultures were positive for \textit{Staphylococcus capitis} that was resistant to penicillin, sensible to teicoplanin and vancomycin and had an intermediate sensibility for levoxacin and gentamicin. For the presence of holosystolic murmur and pregress mitral prolapse, we performed a transthoracic echocardiogram that showed a mild pericardic effusion, aortic sclerosis, normal left ventricular function and severe mitral regurgitation in mitral prolapse with consequent chordal rupture. In particular echocardiogram revealed a giant vegetation (20.6 mm x 18.3 mm) on the posterior mitral limb valve (Fig. 1). According to Duke criteria we did not perform transesophageal echocardiography because the diagnosis was clear. A cardiothoracic surgery consult was obtained for consideration of valve replacement and she was considered a poor candidate. The patient was treated with ampicillin and gentamicin. Following, the patient’s condition deteriorated significantly with the appearance of left hemiplegia, dysarthria and subsequent loss of consciousness. In view of the serious clinical condition of the patient we did not see fit to carry out further investigations. The patient died on day 9 of hospitalization probably due to the massive cerebral embolization and worsening pulmonary and renal function. The family refused an autopsy.

Discussion

We described the oldest case of \textit{Staphylococcus capitis} endocarditis in literature. This infection is more common in valve malformations (in particular mitral prolapse and regurgitation) and in the advanced age, especially for the presence of immunodepressive state. Our patient had mitral prolapse with a secondary regurgitation that can favorite the settlement of vegetation. Transthoracic echocardiography is the first approach to study a patient with suspect of endocarditis and often completed by transesophageal study for the detection of the most small vegetations. Our vegetation is so great that transthoracic exam is sufficient for diagnosis: in fact since now, this vegetation is the greatest described in \textit{Staphylococcus capitis} endocarditis cases.

The size of vegetation is one of the risk factors for cerebral embolism. In the review proposed by Heiro, 69% of cerebral events hit the region supplied by middle cerebral artery, while only 15% in the posterior cerebral artery region. In our case, at the admission the embolism hit only posterior cerebral territory even if at the end there was a massive neurological embolization with consequent death. This event can be avoided by antibiotic therapy and in some selected cases surgery replacement of the valve. We used ampicillin and gentamicin according to antibiogram. In our case, even if the antibiotic therapy was started early, neurological event was already present and surgery replacement was impossible.

In conclusion, our case demonstrates that neurological complication is a negative prognostic factor for prognosis of \textit{Staphylococcus capitis} endocarditis, in particular in very old age.
Neurological presentation of infective endocarditis is rare in *Staphylococcus capitis* infections and linked to poor prognosis. We report a case of a cerebrovascular event due to mitral endocarditis in a very old woman that had a fatal outcome despite appropriate therapy.

**Key words:** Neurological complications • Endocarditis • *Staphylococcus capitis* • Very old

**References**