Case reports

Clinical presentation and prognosis of infective endocarditis prosthesis: about 82 cases collected in the cardiology department of the Mohammed VI university hospital center in Marrakech Morocco

ABSTRACT

Endocarditis on a prosthetic heart valve, also known as prosthetic valve endocarditis, is a serious infection that affects the inner lining of the heart (the endocardium) and the artificial valve. The aim of this study: To study the clinico-biological characteristics of patients with Endocarditis on a prosthetic heart valve, and to determine the factors predictive of intra-hospital mortality.

Patients and methods:1This a retrospective, single-center and descriptive study of the 83 cases of Endocarditis on a prosthetic heart valve diagnosed in a tertiary cardiology center for a period of 12 years from June 2020 until July 2024.

Results:

During the study period we collected 82 patients hospitalized for endocarditis on a prosthetic valve, Endocarditis on prosthesis was localized mitral in 53 cases and aortic in 29. we found positive blood cultures in only 36 of our patients. Le Staphylocoques Aureus a étéisolédans 14 cas (47,88%) et le Staphylocoque à coagulasse négative dans 5 cas (21,73%). Transthoracic andtransesophageal echocardiograms were performed in all patients, revealing vegetations in 37 cases (83%).The isolated germs were: Staphylococcus aureus was in 26 cases (31.7%), and coagulase-negative Staphylococcus in 18 cases (21.95%). All our patients benefited from a transnthoracic and trans-esophageal ultrasound which revealed the presence of vegetations in 23 of our patients and the presence of prosthesis disinsertion in 15 of our patients. all our patients benefited from antibiotic treatment, in addition to antibiotic treatment 47 of our patients benefited from surgical treatment with a surgery delay of 37+/- 7 days.

for the surgical indication was performed in 32 of our patients for uncontrolled heart failure, and in17 our patients for embolic complications, while 13 for our patients surgery was performed due to the non-control of the infection under antibiotics. The mortality rate in our series was 26.2%.the predictive factors of mortality in our study were: the presence of heart failure, the delay of surgery and early endocarditis.

Conclusion :

Endocarditis on a prosthetic valve is a complex and high-risk condition that requires prompt and comprehensive management. Key factors influencing the outcome include the timing of infection (early vs. late), the type of prosthetic valve, the causative pathogen, and the patient's overall health and comorbidities.

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Keywords: Infective endocarditis, prosthetic valve, prosthetic valve endocarditis, mortality in prosthetic valve endocarditis

INTRODUCTION

Infective endocarditis (IE) is a rare disease associated with high morbidity and mortality. Patients with a prosthetic valve have an increased risk of presenting this condition, which evalve endocarditis occurs in approximately 1-5% of patients with prosthetic valves, though this rate can vary widely. The diagnosis of IE on a prosthesis is more difficult than the diagnosis of IE on a native valve. Clinical presentations are frequently atypical, endocardial lesions are variable and are not limited to the

presence of vegetation, and finally imaging is often hampered by artifacts linked to the presence of prosthetic material. Hospital mortality is then often higher than that of an IE on native valve, ranging from 20 to 30%

The objective of our work is to study the clinical, biological, bacteriological and echocardiographic characteristics of endocarditis on prosthetic valves as well as the predictive factors of mortality in these patients.

MATERIAL AND METHODS

we carried out a retrospective, descriptive study spread over a period of 5 years from June 2020 to July 2024 having identified all patients hospitalized in the cardiology department of the Mohammed VI university hospital center in Marrakech. Epidemiological, clinical, biological and ultrasound data collected from patient hospitalization files.

RESULTS

We identified 82 cases during the study period. all patients had a mechanical valve, The average age of patients with IE was 39.12 ± 5.6 years with extremes ranging from 18 to 78 years, Endocarditis on prosthesis was localized mitral in 53 cases and aortic in 29. we found positive blood cultures in only 36 of our patients. Dyspnea was the most frequent reason for consultation which was present in 52 of our patients, followed by the alteration of the general state which was found in 32 of our patients, and 26 of our patients presented for an embolic complication while 12 of our patients are presented in a state of cardiogenic shock. The entrance door was found again in only 32 of our patients, the most common being the oral cavity.

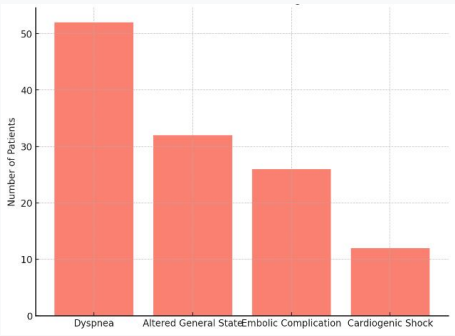

Fig. 1. Reasons for Consultation among IE Patients

On the biological level, all our patients benefited from a blood count which showed hyperleukocytosis in 42 of our patients and inflammatory anemia in 18 of our patients, CRP came back positive in all our patients with an average of 101.2 and procalcitonin performed in 52 of our patients which came back strongly positive.
in all our patients multiple blood cultures were carried out but which came back positive only in 36 of our patients, prior antibiotic therapy and the sampling conditions can explain these results The isolated germs were: Staphylococcus aureus was in 26 cases (31.7%), and coagulase-negative Staphylococcus in 18 cases (21.95%).

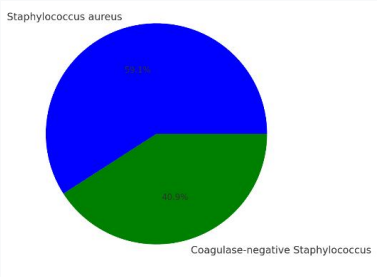

Fig. 2. The isolated germs

A trans-thoracic and trans-esophageal echocardiography was systematically carried out in all our patients having demonstrated the presence of vegetations in 75 of our patients, the vegetations were located in the mitral in 42 and aortic in mitral in 33 cases.
The echocardiography also showed complications such as prosthesis disinsertion in 27 cases and a periprosthetic abscess in 15 cases.

Complications: Heart failure was present in 17 patients. A heart rhythm disturbance was noted in 15cases. One patient presented with complete BAV requiring remote implantation of a pacemaker. A Ischemic stroke was noted in 46cases. Renal failure acute was observed in 15 cases including 7 cases were related to glomerulonephritis acute. Arterial embolisms were found in 17patients.

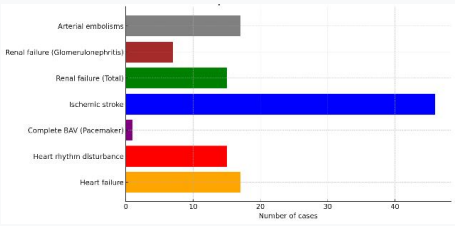

Fig. 3. Complications Observed in Patients

Treatment: All patients received antibiotic therapy probabilistic after taking blood cultures. This antibiotic therapy was based on ampicillin + oxacillin + gentamicin in case of AE on native valve or on late valve prosthesis (>12 months) and it was based on vancomycin + gentamycin + rifampicin in case of early AE (<12 months). The total duration of antibiotic treatment was 39.26 days.
The surgical indication was made in 62 of our patients with an average surgery time of 42+/-2 daysfor the surgical indication was performed in 32 of our patients for uncontrolled heart failure, and in 17 our patients for embolic complications, while 13 for our patients surgery was performed due to the non-control of the infection under antibiotics.

Mortality
In our series we had a total mortality of 26%. The predictive factors of mortality in our study were: the presence of heart failure, the delay of surgery and early endocarditis.

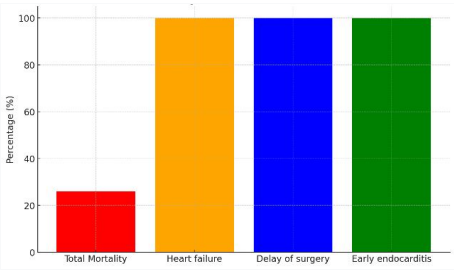

Fig. 4. Mortality and Predictive Factors

DISCUSSION

Prosthetic valve endocarditis (PVE) is a microbial infection of the endovascular that occurs on parts of a prosthetic valve or on the reconstructed native valve of the heart [1] PVE accounts for 20% of infective endocarditis. It is the most severe form of infective endocarditis and is associated with high morbidity and mortality [2].

Endocarditis on a prosthetic valve, also known as prosthetic valve endocarditis, can present with a range of symptoms. Including fever and chills, dyspnea, chest pains, alteration ofgeneral condition with asthenia, anorexia and weight loss.the patient may have other atypical symptoms such as arthralgia, myalgia, night sweats.

PVE is a rare disease but its frequency seems increase from 0.1 to 2.3 per patient per year [3] In the literature, wearers of mechanical prostheses are more exposed to early PVE [4,5].

PVE occurring early after valve surgery (< 1 year) are caused in approximately 20%cases caused by staphylococcus coagulase negative. Beyond one year, the bacterial epidemiology approaches endocarditis on native valves [6] our data agrees with that of the literature.

According to European recommendations relating to PVE [7], a negative TTE in PVE does not exclude the diagnosis. Although the TOE is mandatory in the event ofsuspicion of PVE, its diagnostic value is lower than in IE on native valve [7].

The modalities of antibiotic treatment of PVE are detailed in the ESC recommendations [7]. In the event of a high clinical probability of PVE, probabilistic intravenous antibiotic therapy must be initiated immediately after blood cultures are taken. Antibiotic therapy must then be adapted to the results of blood cultures. In addition to the antibiogram, it is essential to recover the minimum inhibitory concentration, particularly of streptococci with respect to beta-lactams, to adapt the schedule and duration of antibiotic therapy.
The duration of antibiotic therapy in patients with prosthetic valves is generally six weeks. This treatment was previously exclusively administered intravenously (IV), however, recent data show that oral relay is possible beyond 10 to 15 days of treatment [8].

Cardiac surgery is the second pillar of PVE management; approximately 50% of IEs involving prostheses are operated on [11]. The appropriateness and timing of cardiac surgery should be discussed as soon as possible after diagnosis of the infection.

PVE is associated with a poor prognosis. In literature, the overall intra-hospital mortality rate varies between 20and 40% [9,10]. In our series, hospital mortality was 26.2%.

CONCLUSION

Mortality in prosthetic valve endocarditis is influenced by a complex interplay of factors related to the infection, patient's health status, and treatment response. Early identification, effective management of the infection, and addressing complications promptly are key to improving outcomes. Individual risk

assessments based on these factors can help guide therapeutic decisions and improve patient management strategies.

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