Title: AORTIC ROOT ABSCESS: PREDICTORS, CAUSES, MANAGEMENT AND ITS IMPACT ON IN-HOSPITAL OUTCOME

Category: Valvular Heart Disease

Abstract

Background: Aortic root abscess (ARA) is associated with increased morbidity and mortality among infective endocarditis patients. Although antibiotics alone may occasionally sterilize an abscess cavity, many patients die of congestive heart failure, sepsis, or both without surgical intervention. Early surgery is indicated in these patients despite increased risk of peri-operative complications. An important challenge in the successful management is weighing the risks and benefits of surgical treatment and choosing the optimal timing for any needed surgical intervention. Limited data is present about the patient characteristics and outcome in this lethal disease.

We aimed to study the characteristics of patient with aortic root abscess compared to patients with left-sided infective endocarditis without aortic root abscess.

Patients and methods: We included all patients admitted to cardiovascular medicine department in Kasr Al- Ainy university teaching hospital with definite diagnosis of left sided infective endocarditis according to modified Duke's criteria, from the start of February 2005 till February 2019. Those were 285 patients with left sided infective endocarditis.

The patients were classified into two groups:

O Group 1: Included 224 patients with definite left sided infective endocarditis not complicated with aortic root abscess.

O Group 2: included 61 patients with definite left sided infective endocarditis complicated with aortic root abscess (definite (56) /possible (5)). We looked for the patients who had surgery and patients who were treated conservatively (due to high surgical risk, acceptable response to medical management, death prior to surgery or patients' refusal).

Group 2 (patients with aortic root abscess) was then sub-divided into two sub-groups:

• Sub-group 1: Those with aortic root abscess and performed a surgery as a part of their management. This sub-group included 44 patients.

• Sub-group 2: Those with aortic root abscess and didn't perform surgery. This sub-group included 17 patients.

All the patients were studied regarding their demographic data, clinical characters and presentations, laboratory data, available imaging data, complications, treatment response and mortality.

Results:

• We included 285 patients with left sided infective endocarditis. The incidence of ARA in them was 21.4% (61 patients); 5 of them were possible ARA.

•The following findings were higher in patients with ARA: aortic prosthesis (OR: 3.6, p=0.005), undetected organism (Blood culture negative endocarditis / serology negative IE) (OR 2.3, p=0.02), aortic valve vegetations (OR: 3.0, p= 0.02), aortic paravalvular leak (PVL) (OR: 3.9, p

= 0.03), congenital heart disease especially bicuspid aortic valve (BAV) (p

= 0.01), prior IE (p = 0.008) and higher levels of CRP.

• Mitral valve vegetations were lower in patients with ARA (OR: 0.2, p= 0.001).

• No statistically significant difference was found between ARA patients and other left sided IE patients in characters, clinical presentation, occurrence of various major complications or mortality.

• Within ARA group: 44 patients were treated surgically and 17 patients were treated conservatively (mostly due to prohibitive surgical risk). Mortality tended to be higher in the patients among medically-treated patients as compared to surgically-treated patients (P Value= 0.058). However, in a limited sub-group of patients with aortic root abscess with no other major complications and in presence of spontaneous drainage, no statistical difference was found between conservative and surgical management in terms of mortality.

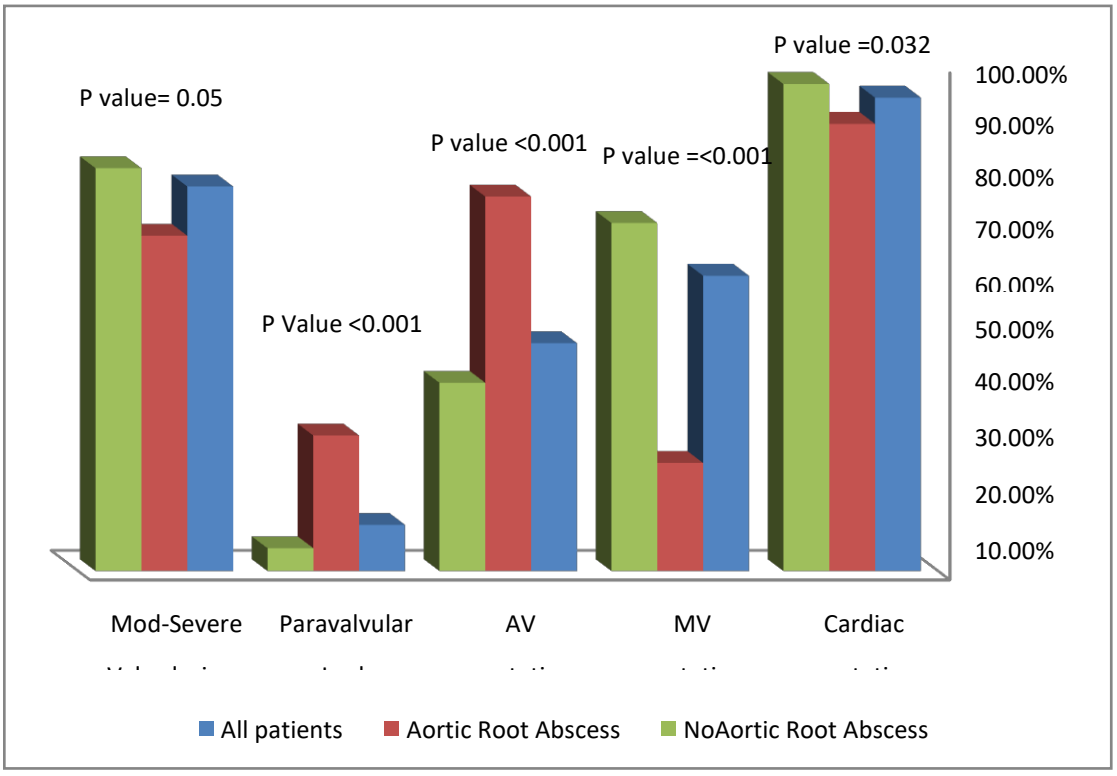

Figure 1: Echocardiographic data of the study population and both groups

Table1 : Complications in the study population and the two groups

Complications	All patients	Aortic root abscess	No aortic root abscess	P value
Severe CHF	141 (49.5%)	28 (45.9%)	113 (50.4%)	0.53
Sepsis	54(18.9%)	15 (24.6%)	39(17.4%)	0.21
Peripheral embolization	96(33.7%)	22(36.1%)	74(33%)	0.66
Splenic infarction	42(14.7%)	7(11.5%)	35(15.6%)	0.42
Cerebral strokes	68(23.9%)			
Mycotic aneurysms	23(8.1%)	6(10%)	17(7.7%)	0.6
Cerebral haemorrhage	20(7%)			
All Cerebral complications	84(29.5%)	18(29.5%)	66(29.5%)	0.995
All left sided embolizations	153(53.7%)	32(52.5%)	121(54%)	0.83
Renal Impairment	86(30.2%)	22(36.1%)	64(28.6%)	0.26
Dialysis	13(4.6%)	2(3.4%)	11(5%)	0.999
Major complications	201(70.5%)	42(68.9%)	159(71%)	0.75
In-hospital mortality	89(31.2%)	22(36.1%)	67(29.9%)	0.36

Conclusion: In our observational study, ARA patients are more likely to have aortic prosthesis, aortic vegetations, aortic PVL and BAV. Despite the fact that significant association with undetected organisms, prior IE and higher levels of CRP imply severe infection status, there was no statistically significant difference between infective endocarditis patients with ARA and those without ARA in terms of complications or mortality. There is a trend toward increased mortality among medically-treated patients compared to surgically treated patients. However, with careful selection and weighing the risks and benefits of surgical or conservative approaches, some patients (with no other major complications) can be successfully managed medically during the acute phase, with possible later surgical or percutaneous correction of valve lesions.

Clinical implication: Intense appropriate medical treatment for ARA should always be the first step for management of ARA with a low threshold for early surgical intervention. Most patients will need urgent surgery for completion of successful management. Limited number of patients can be managed with conservative approach successfully. In these patients, percutaneous intervention for treatment of infective endocarditis complicated with ARA after elimination of infection may be a subject for future research.