

Surgery In Infective Endocarditis

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Summary:

Background: Early surgery during the active phase of infective endocarditis was considered to carry high morbidity and mortality due to technical difficulties on an inflamed tissues.

Objectives: Is to focus a light on the increasing indications for surgery during the active phase of infective endocarditis which lead to significant drop in the hospital mortality.

Patients and Methods: Eighteen patients with bacterial endocarditis and valvular dysfunction were admitted to Iraqi center for heart diseases during the period from January 2008 –April 2013. All of them were fully investigated and adequately prepared for open heart surgery.

Result: Seven-teen patients were successfully treated surgically with uneventful post-operative course. One patient developed another attack of prosthetic valve endocarditis which mandates a redo surgery .Only one patients died two years later.

Conclusion: The indications for surgery and its timing are difficult decisions to take . Close follow up , collaboration between cardiologist cardiac surgeon and laboratory personnels are mandatory.

Key word: Open heart surgery, mechanical valve Endocarditis, prosthetic valve.

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Introduction:

Infection of the endocardium and heart valve continued to create significant morbidity in spite of the evolution of many potent, broad spectrum antimicrobial therapy, with increasing complications like valve incompetence, embolization, cerebro vascular accidents and heart block. Infective endocarditis is a serious disease with an incidence of 3-10 /10000 patients yearly. (1-3)It is a primary when intrinsic anatomic parts of the heart are affected or secondary when the infection is on an intracardiac prosthesis. (4).

Early surgery in patient with infective endocarditis and large or mobile vegetation significantly reduced the composite end point of death from any cause such as heart failure, heart block, valve incompetence and embolic events decreasing the risk of systemic emboli (5-6)

The two sets of consensus guidelines for the performance of early surgery on the basis of vegetation are different to the 2006 American college of cardiology and American heart association (ACC-AHA) guidelines (five) recommended early surgery as class II a indication only in patient with recurrent embolic and persistent vegetation , whereas the revised 2009 European society of cardiology guidelines (seven) recommended early surgery as class II b indication in patient with isolated, very large vegetations (>15 mm in diameter) but till now no study constraint ethically and logistically clarified the indications or the trimming which show the most favorable outcome.(7)

Material and Methods :-

Study design and population : This is a retrospective study which was carried out in the cardiac surgery department of the Iraqi center for heart diseases, Baghdad Iraq. Between Jan 2008 and April 2013 eighteen patients with infective

endocarditis necessitating open heart surgery were operated on for (1) Mitral valve replacement (2) Double valve replacement (3) Aortic valve replacement (4) Mitral valve replacement with closure of atrial septal defect. The operations were performed by the same surgical team. Antibiotic and anticoagulant with anti-failure were given in all patients prior to surgery based on a standard protocol.

The scientific ethical approval was obtained from scientific committee of the Iraqi center for heart diseases.

B. Study Variables: The data collected on each patient included demographics, medical history, and several pre and post-operative variables that were thought to influence outcome, in addition to all complications that occurred during the hospital stay. The length of ICU and hospital stay, and the outcomes (death or discharge) , were also considered.

The variables consisted of age, gender, medical history, blood culture. cardiac echocardiography, emergency surgery, preoperative use of antibiotics and anti coagulant, operative data, such as replacement ,type of valve, type of sutures , the way of the suturing, clinical course in ICU (renal impairment, cerebro vascular accident , sternal wound infection), length of hospital stay and outcomes at hospital discharge.

C. study end points: The primary endpoint of the study was in hospital mortality. Patient outcome was evaluated on the day of hospital discharge. Secondary endpoint includes the early postoperative complications, length of stay in the ICU and the hospital.

D. surgical technique: The standard approach was median sternotomy. Full heparinization and aortic and bicaval cannulation, cardio pulmonary bypass with topical and central cooling, aortic cross clamp, cardioplegic arrest of the heart. The exposure for the mitral valve was through the left atriotomy incision and to the aortic valve was through transverse aortotomy .One case of mitral with atrial septal defect was approached

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through right atriotomy .To avoid systemic embolization of the vegetations, cross –clamp of aorta was done in a very fast way with minimal heart manipulation during preparations.

The valve replacement with mechanical valve was used exclusively in all patients, no repair was attempted.

The valve was replaced using interrupted 3-0 monofilament prolene in the mattress technique. While the atrial septal defect was closed using Gluteraldehyde tanned pericardial patch sutured by 4-0 monofilament prolene suture by the continuous technique.

Results:-

A total of 18 patients , who underwent surgery for bacterial endocarditis were studied , they were 11 females (60%) and 7 males (40%).the youngest patient was eighteen years old male while the oldest patient was a fifty-four years old female patient with the mean age of thirty six years. The distribution of the patients as regard their age is shown in table -1-.

Table -1 – age distribution

| Total No. : 18 | | |
|----------------|------|-------|
| Age | No . | % |
| 10 – 20 | 1 | 5.56 |
| 20 - 30 | 6 | 33.34 |
| 30 – 40 | 5 | 27.78 |
| 40 - 50 | 5 | 27.77 |
| 50 – 60 | 1 | 5.55 |

In the Medical history 50% patients were known to have past history of valvular heart disease, while the remaining patients had no previous medical history of valvular heart disease. All the patients had negative blood culture. These patient had different intra cardiac defects, the majority of them 14 patients had mitral valve disease, 2 patients had double valve disease (aortic and mitral) .one patient had aortic valve disease and the last patient had atrial septal defect with mitral valve disease as illustrated in Table -2-

Table –2– intracardiac defects

| Total No. :18 | | |
|--|-----|-------|
| Valve Lesion | No. | % |
| Mitral valve disease | 14 | 77.77 |
| Aortic and mitral valve disease | 2 | 11.12 |
| Mitral valve disease with atrial septal defect | 1 | 5.56 |
| Aortic valve disease | 1 | 5.55 |

Since the blood culture was negative for all patients, the final diagnosis was based on the sum of clinical, and echo cardiographic findings and it was as listed below:-

15 patient had vegetations

9 patients had large vegetation > than 10mm

7 patients had mobile vegetations

1 patient had rupture chordae in anterior and posterior mitral leaflets

1 patient had para- valvular abscess in aortic valve

Surgery was performed for all the patient as an emergency operation to avoid further deterioration of the patients general health. In the early post-operative follow up period, patients were kept in the ICU for 48-72 hours, antibiotics (tripple therapy), anticoagulant (heparin), and antifailure (Digoxin and diuretics) were continued. The post-operative period were uneventful apart from two cases had renal impairment (serum creatinine increased about 0.3mg/dl) and it was treated conservatively .There were no sternal wound infection, nor cerebro –vascular accident. The hospital length of stay between 6-10 days in means of 9 days. There were no peri - operative nor hospital mortality.

The late post-operative follow up showed that all the 18 patients had uneventful course at the first year of surgery only 8 patients were continued to be followed up through the second year. One female patient (5.5%) developed prosthetic aortic valve endocarditis and she needs redo surgery 1 year later. One male patient (5.5%) with atrial septal defect and mitral valve replacement died 2 years later due to anticoagulation related hemorrhage. Table – 3

Table – 3 – one year follow up

| End point | | 18 |
|-----------|-------------------------------------|----|
| Primary | Hospital death | 0 |
| | Embolic event | 0 |
| | Renal impairment | 2 |
| Secondary | Recurrent of infective endocarditis | 1 |
| | 1 Year Death | 1 |

Discussion:

The mortality rate of patients affected by infective endocarditis was influenced by many modification in therapeutic management. Thus, three distinct periods are evident: [1] Pre - antibiotic era infective endocarditis was always fatal; [2] The introduction of penicillin in the 1940 greatly reduced the number of death , but the mortality rate did not substantially fall there after despite the development valve surgery. [3] During the past decade, surgical indications had greatly increased so we have entered in the era of early surgery (8). The prevalence of infective endocarditis among female is more than male in our study which is comparable to many studies (1,2,3,8) this because of the increase risk of infections in genital-urinary tract. The preferred prosthetic valve for replacement is the biological valve (6,7) which was not used in our series because of its unavailability.

Our study showed that surgery performed early for patient with infective endocarditis once it is indicated is less hazardous and reduces the composite primary end point of death from any cause. The early mortality in our study was zero which seems to be so encouraging as to consider surgery for infective

endocarditis early the acceptable mortality rate is between 10%-20%. (9).

The rate of systemic embolization in our study was zero, while it was mentioned in many literature to be between 10-50% (10) this could be explained or by our low volume study that we follow the guidelines of considering big vegetation {more than 10mm} and mobile an emergency surgery.(11)

Our study have several limitations. It was limited in scope in that it was concerned with patient who had sever native valve disease and vegetation's, and it exclude prosthetic valve endocarditis. The bacteriological work up in our study was unsatisfactory since these patients received antimicrobial before the diagnosis by blood culture. The reported cases of infective endocarditis among intravenous drugs users (12) is not reported in our study.

Conclusion

The indications for surgery in infective endocarditis and its timing are difficult decision to take. Most recent results are favorable for early surgical interference in complicated infective endocarditis. The identification of high risk patients and their quick transfer to specialized medico surgical centers seems to be crucial to improve the diagnosis. Standardized management by a skilled multidisciplinary team has proven to decrease any significant mortality.

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