ECHOCARDIOGRAPHIC ASSESMENT OF SYMPTOMATIC PATIENTS AFTER MITRAL VALVE REPLACEMENT

THESIS

SUBMITTED IN PARTIAL FULFILLMENT

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(CARDIOLOGY)

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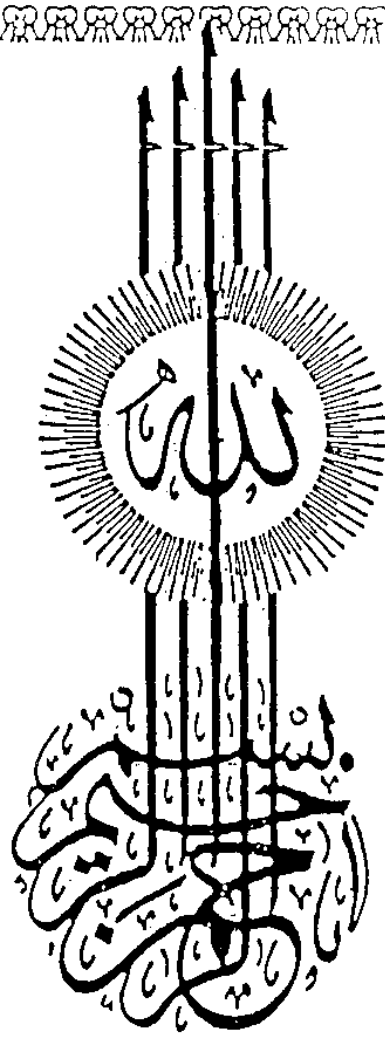

سبحانك

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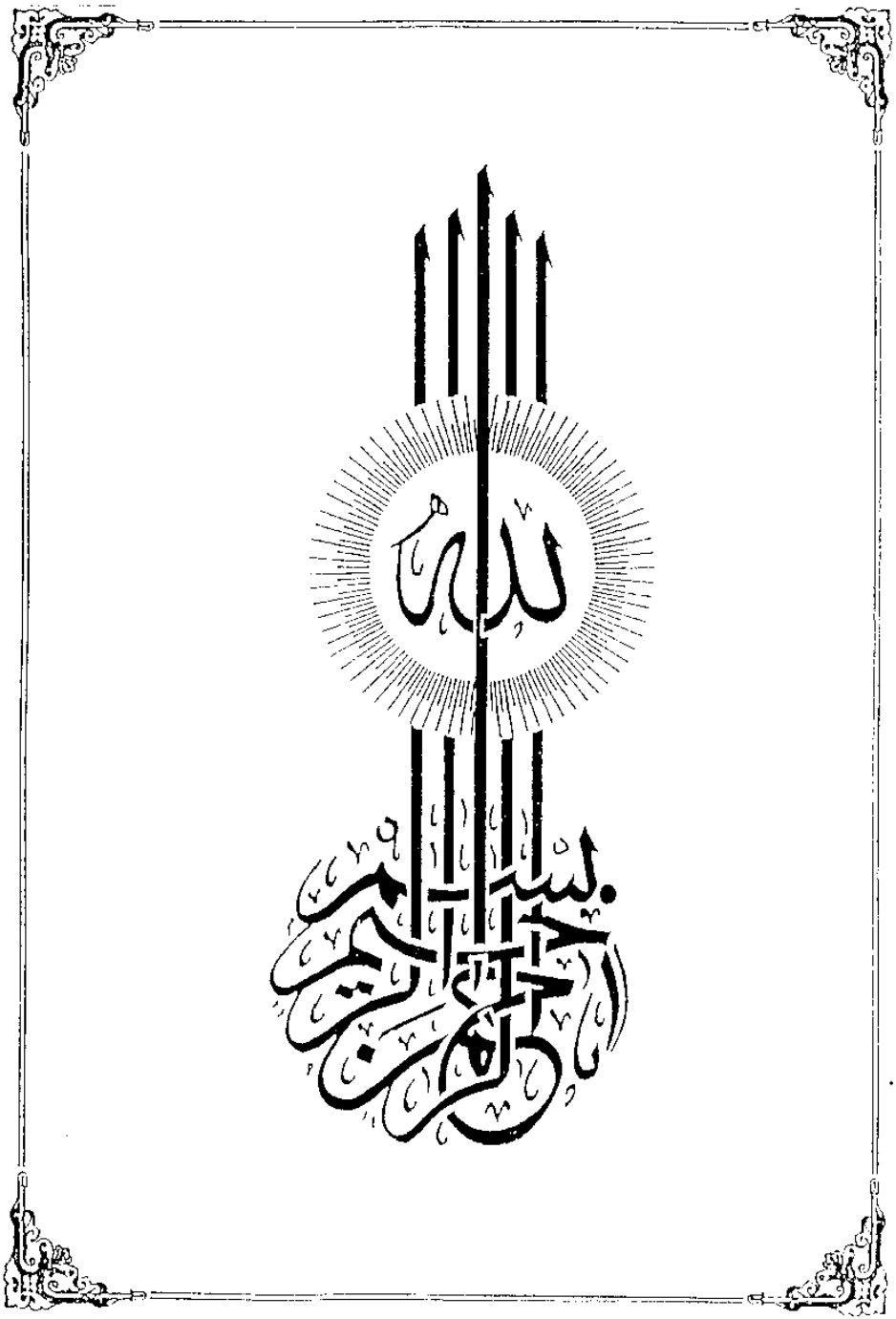

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TO MY MOTHER

AND THE MEMORY OF MY FATHER

THIS WORK

IS DEDICATED

CONTENTS

INTRODUCTION
AND
AIM OF WORK

INTRODUCTION AND AIM OF WORK

At the start of era of valve replacement it was hoped that such patients were going to be cured from their, disabilities once their damaged valves were replaced by prosthetic devices.

But as experience in the field grew it was soon, realized, that these patients should be comitted to a life time of careful medical management.

The cardiologist who recomended valve replacement should carry the responsibility of following up patients with prosthetic valves for the evidence of change in cardiac, dynamics and early detection of valve related complications.

In our country valve replacement surgery is now steadily, progressive.

However there has been no satisfactory systematic study of, the post-operative course of these patients in correlation to the pre-operative status.

The aim of this work is to assess symptomatic patients, after mitral valve replacement for detection of the possible, underlying cause of these symptoms.

These may be due to poor left ventricular function prosthetic, valve malfunction and/or other complications.

Those patients will be examined clinically with utmost, care and a thorough medical history will be taken.

M-mode, 2 D and Doppler Echocardiography will be done, for each patient.

The results will be tabulated analysed and discussed, in the hight of the review of the previous literature.

REVIEW OF LITERATURE

CHAPTER (1)

THE HISTORY OF MITRAL VALVE REPLACEMENT

The earliest experimental valve prostheses were analogus to man's first attempt to fly with artificial wings (Merendino, 1961). During the early 1950's, Hufnagel and Campell independently developed a new approach to the management of aortic incompetence in experimental animals by inserting artificial valves into the decending thoracic aorta of dogs (Campell, 1950 and Hufnagel, 1951). In September 1952, Hufnagel ignited the fire of prosthetic valve implantation by successfully implanting his caged ball into the descending thoracic aorta of a patient with severe aortic regurge (Hufnagel, 1953).

By 1953, Gibbon exited the entire field of medicine by his announcement of the first sucessful use of total cardio-pulmonary bypass for intrathoracic surgery in man (Gibbon, 1954).

Since that time many trials were made for partial valve, replacement. However none of these techniques were sucessful and it was concluded that: "total, rather than, partial valve replacement was necessary" (Lefrak and Starr, 1979).

By 1960, Leaflet valves were introduced and tried by Braunwald,Hufnagel and others. Although a small number of patients died obtain satisfactory palliation, most of these operations failed (Braunwald et al., 1965).

During the chigaco meeting on prosthetic valves in 1960, Harken presented his work on 7 patients for whom he, implanted caged ball valves in the subcoronary position, with two survivors. In the same meeting, Albert Starr, demonstrated a caged Ball design for mitral valve replacement, that he had introduced with his engineer associate lowell Edwards. This valve successfuly implanted by Starr 10 days after meeting in a 52 years old man who had a mixed mitral lesion, and who became the first long term survivor after mitral valve replacement. By 1961 the Oregon group reported eight mitral replacements, with six survivors (Starr and Edwards 1961).

During the next five years, thousands of starr-Edwards mitral and aortic prosthesis were implanted allover the world, the overall results were satisfactory and for the first time data became available allowing comparison of the natural history of valvular heart disease with those accomplished by elimination of the natural obstruction or leak (Lefrak and Starr, 1979).

CHAPTER (2)

THE CONCEPT OF MITRAL VALVE REPLACEMENT

Although mitral valve replacement surgery has improved the Quality and Quantity of life for many patients with mitral valve disease (Bjork et al., 1979); yet it is not without proplems (Rahimtoola, 1983). There is of course, the risk of the operation itself which varies from one center to the other, and can be as high as 24.4% for patients in New York Heart Association Functional Class IV (Appelbaum et al., 1976). Post surgical proplems related to thromboembolism,Bleeding,infection or failure of the device, may be disabling, fatal or require reoperation (Peterson et al., 1967 and Appelbaum, 1976). Moreover some patients may not improve despite a techniqually perfect correction of their valvular abnormalities. In some patients this lack of improvement is due to myocardial injury during surgery (Hildner et al., 1972, and Rahimtoola, 1983), and in another minority due to failure of correction of other valve lesions (Peterson et al., 1967), in the majority of patients however, it appears to be due to ventricular Dysfunction antedating surgery (Hood, 1980).

Hood , in 1980, stated that "there is a point in the natural history of valvular disease beyond which, ventricular dysfunction is irreversible or at best only partially reversible. The obvious implication of this is that the operation shouldn't be delayed to this point".

In deciding upon mitral valve surgery three major Questions need to be answered. These are:

(1) What is the optimal time of surgery?

(2) What type of surgery is to be done for a particular patient?

(3) Should mitral valve replacement be the choice, then what type of valve prosthesis is to be choosen?

The timing of surgery:

Since the introduction of mitral valve replacement in surgical treatment of mitral valve disease, its timing has been a matter of vigorous debate between aggressive surgeons who advocated replacement (Kerklin, 1973 and Boncheck & Starr 1974) and conservative cardiologists (Selzer, 1976 and Rahimtoola 1973 & 1976) who expressed caution and concern over the problems related to implantation of the new devices.

It is generally accepted that the optimal timing of mitral valve replacement is principally determined by the nature of underlying mitral valve disease (Fowler, 1979).

(1) Mitral stenosis:

Because mitral stenosis is not ordinarily immediately life threatening and its cardiac effects are usually reversible, surgical treatment can be deferred as long as symptoms can be controlled medically. Mitral valvotomy whenever possible, is the procedure of choice. However, for patients with associated significant mitral fibrosis and/or calcification, valve replacement should be performed (Fowler, 1979).

(2) Mitral insufficiency:

a) Acute mitral insufficiency:

Acute varieties of mitral insufficiency, such as those following rupture of chordae tendinae or papillary muscles are usually considered as indication for emergency mitral valve replacement in order to control refractory left ventricular failure. This is usually carried out after rapid medical stabilization by anti-failure treatment including after load reduction.