بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

LEFT VENTRICULAR FUNCTION IN CHILDREN WITH END STAGE RENAL FAILURE ON MAINTENANCE HEMODIALYSIS

Thesis

Submitted to the Faculty of Medicine,
University of Alexandria,
in partial fulfillment of the requirements
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By

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To My Parents

and

My Future Wife

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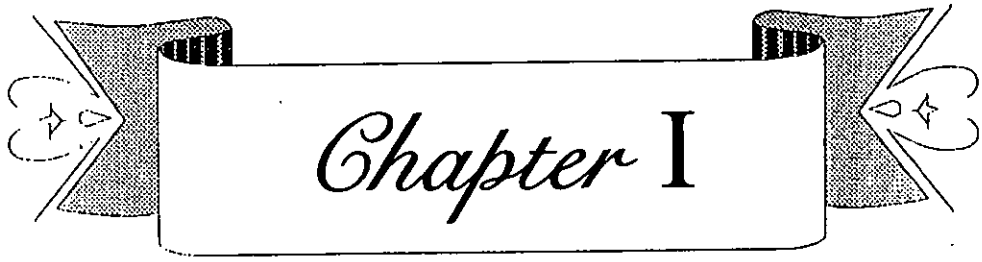
List of Abbreviations

CRF	Chronic renal failure
ESRF	End stage renal failure
ESRD	End stage renal disease
AVF	Arteriovenous fistula
LV	Left ventricular
LVH	Left ventricular hypertrophy
CI	Cardiac index
LVEDD	Left ventricular end diastolic diameter
LVESD	Left ventricular end systolic diameter
PWT	Posterior wall thickness
PWTD	Posterior wall thickness in diastole
IVS	Interventricular septum
IVSD	Interventricular septum thickness in diastole
LVM	Left ventricular mass
LVMI	Left ventricular mass index
FS	Fractional shortening
mVcf	Mean velocity of circumfernetial fiber shortening
EF	Ejection fraction
PEP	Pre-ejection period
LVET	Left ventricular ejection time
DBP	Diastolic blood pressure
SBP	Systolic blood pressure
MBP	Mean blood pressure
AOD	Aortic root diameter
AOSD	Aortic stroke distance
CO	Cardiac output
SV	Stroke volume
SVI	Stroke volume index



INTRODUCTION

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Definition of end stage renal failure

Chronic renal failure (CRF) is a continuous process that begins when some nephrons are lost and ends when the remaining nephron population can no longer sustain life; that is end stage renal failure (ESRF).[1]

Effects of ESRF on the body

Renal failure affects many organs and systems in the body as the bones (renal osteodystrophy), hematological system (anemia, bleeding tendency), immune system (infection), nervous system (encephalopathy), gastrointestinal system (ulceration), endocrine system (growth retardation), electrolyte disturbances and cardiovascular system (cardiac dysfunction).[2]

Cardiovascular affection in ESRF

Cardiovascular complications account for nearly 50% of deaths in children with ESRF. The cardiovascular affection in ESRF is due to severe anemia, electrolyte, acid base and humoral abnormalities, alterations in intravascular volume, chronic pressure load due to hypertension as well as impairment of myocardial metabolism due to chronic exposure to uremic toxins. In addition, the therapeutic necessity of arterio-venous fistula (AVF) construction for hemodialysis as well as the hemodialysis procedure itself alter cardiovascular hemodynamics. These various factors may contribute to functional derangements which may be manifested by latent or overt cardiac failure in both children and adults.[3]

Children, especially those on chronic hemodialysis, have varying degrees of depression of left ventricular performance and contractility.[4]

Cardiac disease has extensively been investigated in adult patients, but to a much lesser extent in children and adolescents with CRF.[5] The increasing use of refined-non-invasive diagnostic techniques in clinical cardiology has also greatly facilitated the detection and evaluation of cardiac abnormalities in young patients. Echocardiography and Doppler ultrasonography have become the main tools for assessing cardiac structure and function.[6]

Four main structural abnormalities of the heart have been described in patients with CRF:

1. Left ventricular (LV) hypertrophy
2. Expansion of the non-vascular cardiac interstitium with extracellular deposition of collagen fibres leading to intermyocardiocytic fibrosis.[7]
3. Changes of vascular architecture; there is thickening of arteriolar walls, which is observed even in the absence of hypertension.[8] This thickening is due to hyperplasia of smooth muscle cells rather than hypertrophy.[9]
4. Myocardial calcification which occurs in adult ESRF patients, but its occurrence in the pediatric age group has not been reported.[10,11]

All these abnormalities promote LV dysfunction. Fig(1)[12]

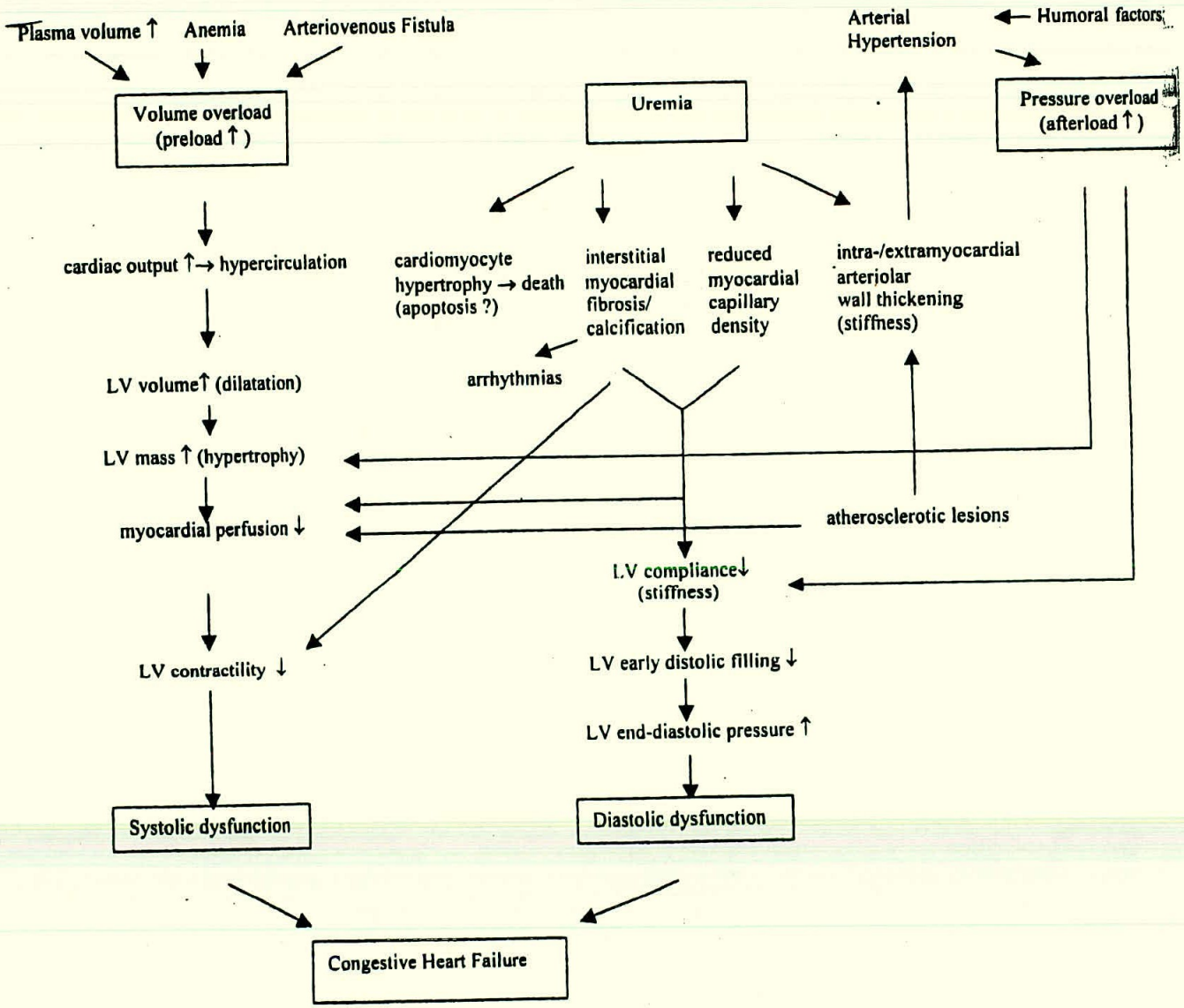

Figure 1. Relationship between pathogenetic factors, hemodynamic changes, structural alterations, and clinical manifestations of cardiac disease in chronic renal failure (LV left ventricular)[12]