بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ.

صدق الله العظيم
البقرة - ٣٢ -

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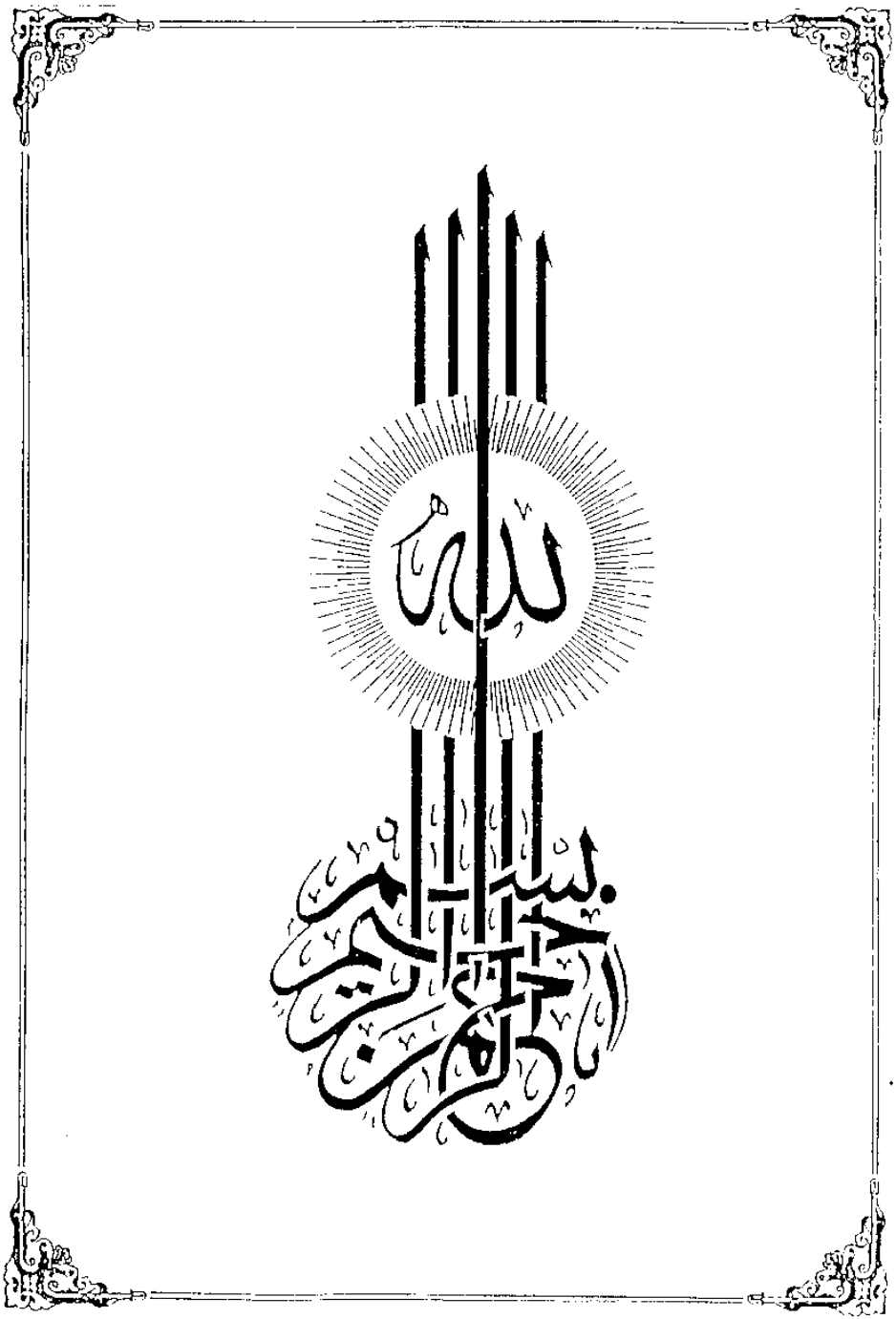

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LIST OF ABBREVIATIONS

ARF	Acute renal failure
ATN	Acute tubular necrosis
BW	Body weight
CRF	Chronic renal failure
DBP	Diastolic blood pressure
DS	Duplex scanner
DSA	Digital subtraction angiography
GFR	Glomerular filtration rate
IV	Intravenous
IVU	Intravenous urography
L_1 & L_2	Lumbar spine number 1 and 2
PI	Pulsatility index
PRA	Plasma renin activity
RAR	Renal aortic ratio
RI	Resistive index
RVH	Renovascular hypertension
S	Serum
SBP	Systolic blood pressure
SD	Standard deviation
SLE	Systemic lupus erythematosus
UTI	Urinary tract infection

Introduction

and Aim of the Work

INTRODUCTION

Ibels et al. (1979) found that certain pathological changes are extremely common in the arteries of uremic patients undergoing dialysis. these changes are represent an acceleration of the normal arterial aging processes. This generalized arterial disease includes the renal artery and produce the same changes within it. These changes also can produce a certain angiographic picture when we study the patients with chronic renal failure using a contrast material. We can see an attenuation of the arterial system within the kidney (*Ekelund,* 1979 and *Hollenberg et al.,* 1983).

Although angiography is the standard method for the assessment of vascular anatomy yet, it has several drawbacks and pitfalls (*Rae,* 1989). On the other hand the abdominal gray-scale ultrasound being a safe method in imaging the renal arteries, is unreliable method in evaluation of several renal artery pathology (*Greene et al.,* 1981).

The ideal non-invasive vascular diagnostic method with an accuracy of 96% to 98% is the duplex scanning. Units that incorporate both imaging and Doppler devices are generally referred to as "Duplex" machines. The most obvious benefit of a duplex scanner (DS) is the

ability to image a vessel, then steer the Doppler sample volume to any area on the screen and obtain a flow sample. This allows the examiner to visualize a stenosis, and determine the hemodynamic effect of the stenosis (*Rae,* 1989). Various parameters have been derived from the Doppler signal spectrum to quantify important properties of the flow as the pulsatility index (PI) and the resistive index (RI) (*Bom et al.,* 1984).

Aim of the Work

The aim of this study is to evaluate the effect of CRF in children on regular hemodialysis on the arterial renal blood flow. The study will include assessment of the relation between renal blood flow and various clinical and laboratory parameters of CRF.

Review of Literature

I. ANATOMY

A. Gross Anatomy of Renal Arteries

Renal vasculature may be studied at various levels, commencing with the principal and accessory renal arteries. Their primary patterns of branching and areas of distribution suggest the presence of vascular segmentation. A single renal artery to each kidney is present in about 70% of individuals, but they vary in their level of origin (the right often being superior), in their caliber, obliquity and precise relations (*Merklin and Michels,* 1958). The two large renal arteries branch laterally from the aorta just below the inferior mesenteric; both cross the corresponding crus at right angles to the aorta. The right is longer and often, higher, passing posterior to the inferior vena cava, right renal vein, head of the pancreas and descending part of the duodenum. The left is a little lower; it passes behind the left renal vein, the body of the pancreas and splenic vein and may be crossed anteriorly by the inferior mesenteric vein (*Gray,* 1989) (Fig. 1).

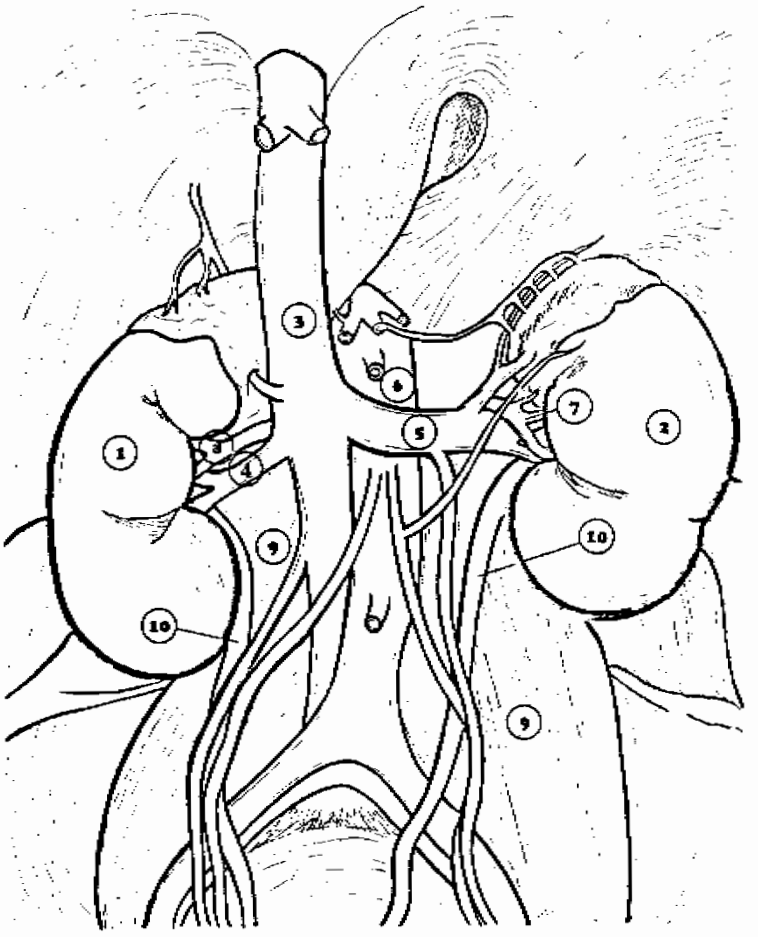

Fig. (1): The kidneys and their vascular relationships. 1. Right kidney; 2. left kidney; 3. inferior vena cava; 4. right renal vein; 5. left renal vein; 6. aorta; 7. left renal artery; 8. right renal artery; 9. psoas muscle; 10. ureter. (*Hagen-Ansert and Levzow,* 1989).