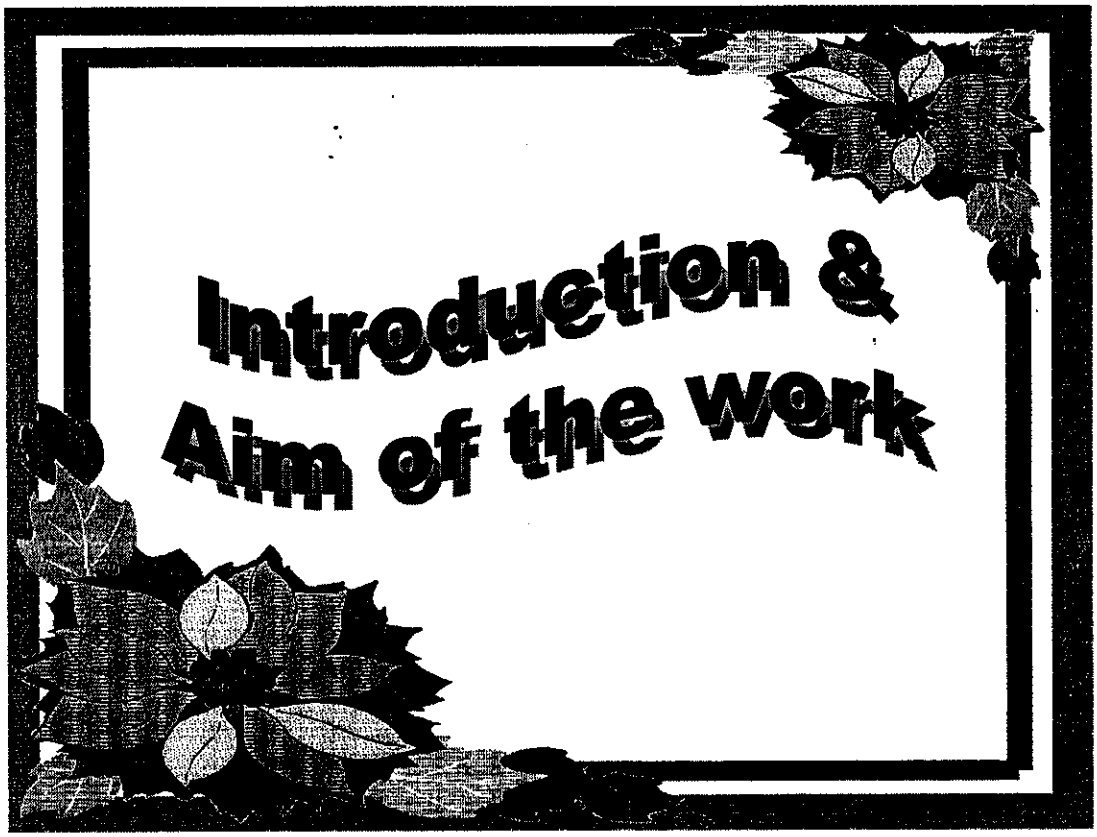
Introduction &
Aim of the work

INTRODUCTION

Renal failure has became a widely spread disease in Egypt and in other parts of the world. Many patients with renal impairment require regular haemodialysis over several years. For this purpose a native arteriovenous fistula is constructed ***(Schwab et al., 1989).***

Arteriovenous fistula (AVF) is the preferred access for low long hemodialysis, with superior long-term patency rates; ***(Brimble et al., 2000).***

Most of the haemodialysis fistulae were usually created by joining the radial artery to the cephalic vein at the wrist (radiocephalic) or less commonly the brachial artery to the cephalic vein (brachiocephalic), the brachial artery to the basilic vein (brachiobasilic) or to the antecubital vein in the arm ***(Gilula et al., 1995).***

In the process of haemodilaysis blood from the resultant enlarged vein proximal to the fistula is delivered to the haemodilaysis bath under arterial pressure. The dialyzed blood is returned via a second needle inserted into the same or another vein located proximal to the first needle; alternatively, a unipuncture needle with a valve allowing both withdrawal and injection of blood through the same needle may be empolyed. Satisfactory hemodialysis requires three sessions per week (4-6hourd each) at a minimal flow rate of 200-300 ml per minute and an ideal fistula flow of 400-500ml per minute ***(Kottle, 1998).***

A fistula matures in about 10 days; however, it takes three weeks for the vein to become "arterialized", i.e., large and thick enough, skin heals; a thrill develops in the veins continuous with the shunt, and these veins dilate and become readily palpable ***(Gilula et al., 1995).***

The fistula should be created when the creatinin clearance reaches 5-7ml/minute. Maintenance of adequately functioning vascular access is one of the challenges of long-term haemodialysis. Over time, the development of stenoses (predominantly venous) is a major cause of access failure, resulting in additional morbidity and cost ***(Gaylord et al., 1993).***

It has been reported that native arteriovenous fistulae used for long-term vascular access for haemodialysis have an occlusion rate of 17%-45% per year ***(Schwab et al., 1995).***

Noninvasive imaging techniques such as ultrasonography (US) were of limited use ***(Pagano et al., 1994; Safa et al., 1996)***. Colour Doppler U/S is a relatively new procedure that has been available since 1986.

It combines 2 different technologies- Doppler U/S and gray scale US- in a way that it provides simultaneous : real-time visualization of soft tissue structures and blood flow over the entire scan field ***(Polak, 1995)***.

Color Doppler ultrasonography is a very effective method in the evaluation of hemodynamics of arteriovenous fistulas in hemodialysis patients. It will allow an understanding of the pathology in nonfunctioning fistulas or of the cause of complications that develop secondarily ***(Bolognesi et al., 2000)***.

Colour Doppler US enables accurate detection of stenosis and thrombosis of the haemodialysis access which will enable early management of the lesion ***(Beathard, 1992).***

The aim of the work is to study the role of color Doppler ultra sonography in the assessment of haemodialysis access fistula and detection of its complications.