ROLE OF DUPLEX ULTRASONOGRAPHY IN DIAGNOSIS OF CASES OF DEEP VEIN THROMBOSIS OF THE UPPER EXTREMITY

An Essay
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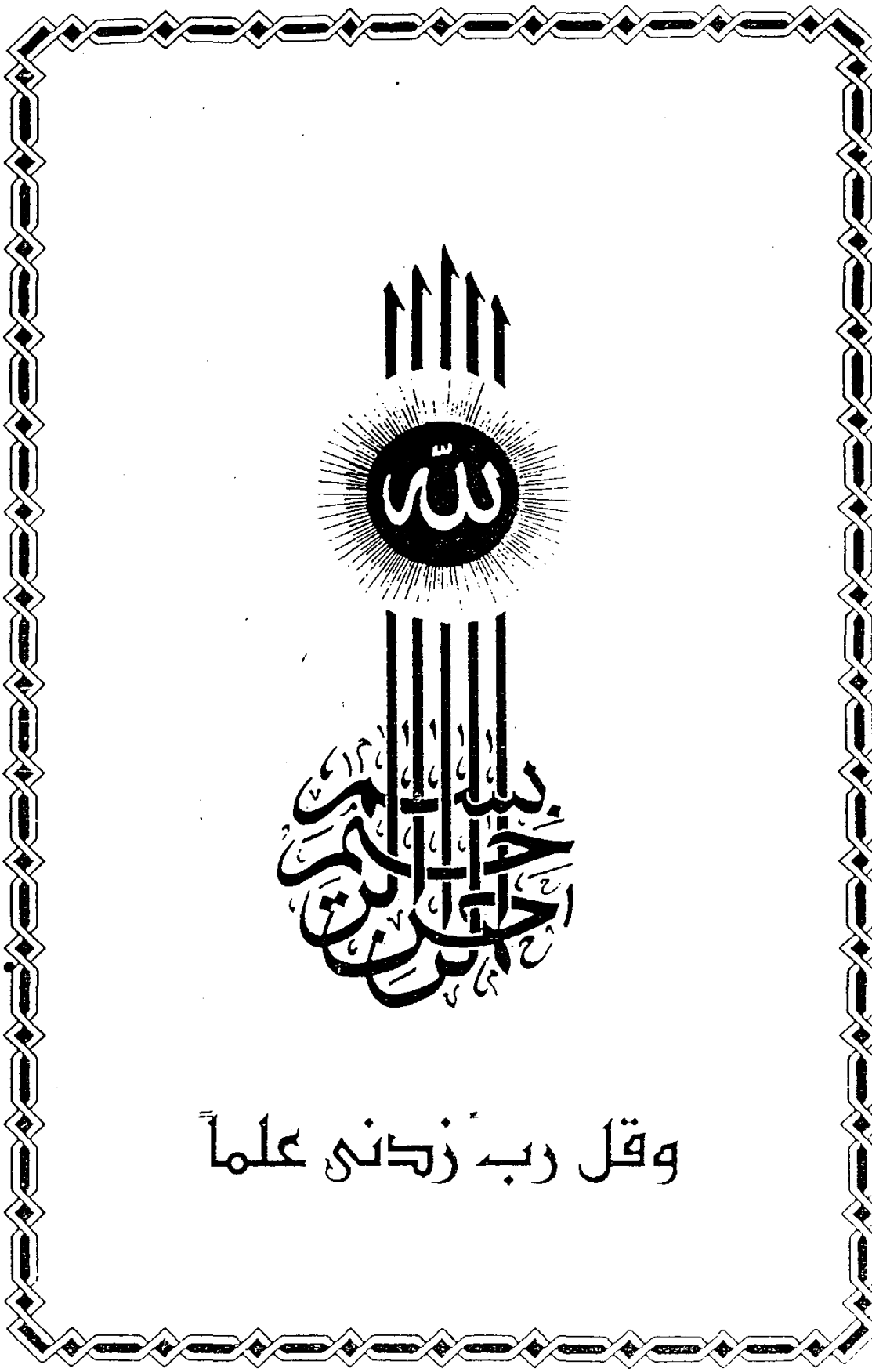

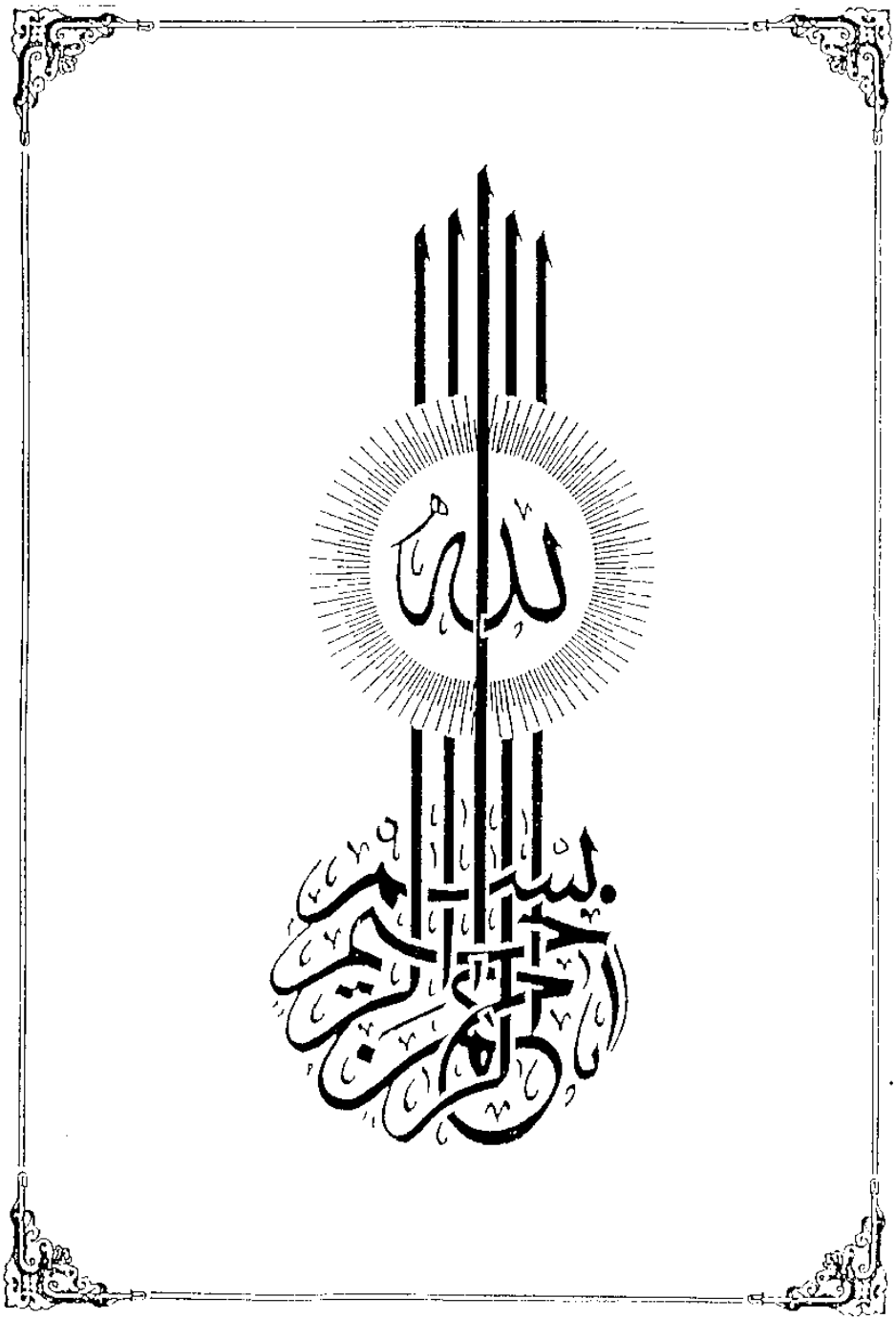

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Introduction

Upper extremity venous thrombosis is becoming more common because of the frequent use of indwelling catheters. When the catheters are excluded malignancy is the commonest predisposing factor.

The administration of intravenous solution and dialysis operations in renal failure played a great role in increasing the incidence of the upper limb phlebitis. As in the leg, the thrombosed veins of the upper limb may give off pulmonary emboli.

This study focuses light on the principle application of the duplex ultrasound in detection of deep venous thrombosis of the upper limb.

The value of duplex examination is discussed and a comparison with other modalities of examination as venography is also focused upon to highlight the benefits of duplex in that subject.

ıapter 1

Anatomy

Anatomy of Veins of the Upper Limb

Veins are conveniently grouped as superficial and deep, but these are widely interconnected. The superficial veins are subcutaneous in the superficial fascia; deep veins accompany arteries among the muscles of the limb. Both groups have valves, which are more numerous in the deep veins (Williams et al., 1989).

Superficial Veins of the Upper Limb

Superficial veins include the cephalic, basilic, median cubital, antebrachial veins and their tributaries.

Dorsal digital veins pass along the sides of fingers, joined by oblique branches; they unite from the adjacent sides of digits into three dorsal metacarpal veins, which form a dorsal venous network over the metacarpus ; this is joined laterally by

a dorsal digital vein from the radial side of the index finger and both dorsal digital veins of the web-web and is prolonged proximally as the cephalic vein (Williams et al., 1989).

Medially, a dorsal digital vein from the ulnar side of minimus joins the network, which drains proximally into the basilic vein. A vein often connects the central parts of the network to the cephalic near mid-forearm. Palmar digital veins connect to the dorsal by oblique inter-capitular veins passing between metacarpal heads; they also drain to a plexus superficial to the palmar aponeurosis, extending over both thenar and hypothenar regions (Fig. 1)(Williams et al., 1989).

The Cephalic Vein

The Cephalic vein commonly formed over the anatomical snuff box, curves proximally from the radial end of the dorsal plexus round the forearm's radial side to its ventral aspect, receiving veins from both aspects. Distal to the elbow, a branch, the median

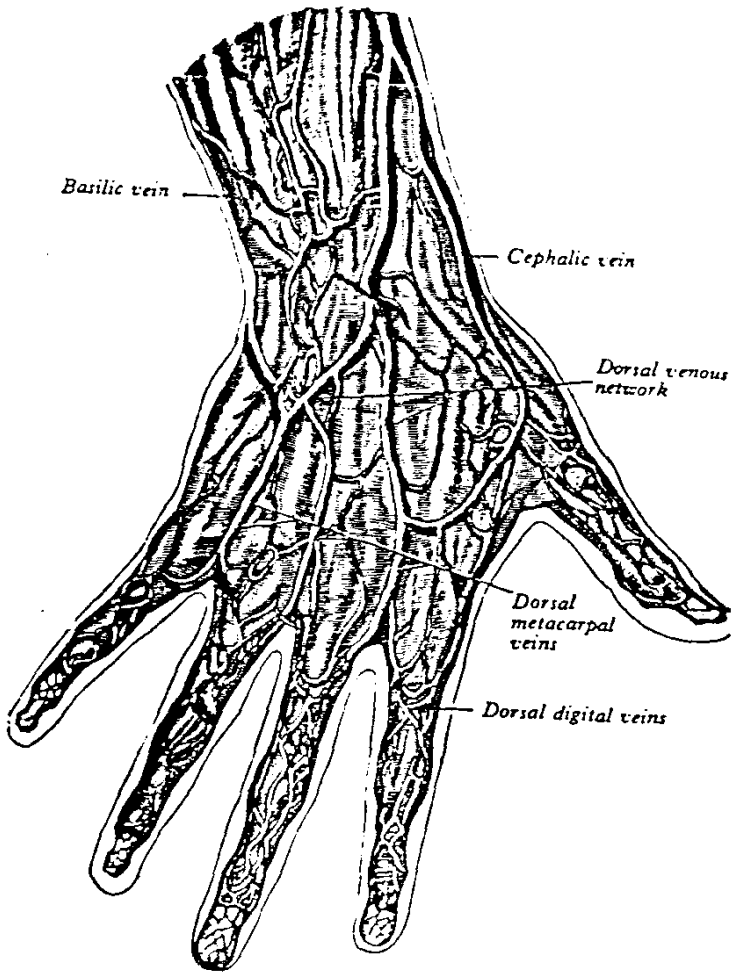

Fig. (1) Veins of the dorsum of the hand

cubital vein joined by a ramus from the deep veins, diverges proximally to reach the basilic vein. The cephalic ascends in front of the elbow superficial to a groove between the brachio-radialis and biceps, crosses superficial to the lateral cutaneous nerve of the forearm, ascends lateral to the biceps and between pectoralis major and deltoid, where it adjoins the deltoid branch of the thoraco-acromial artery. Entering the infraclavicular fossa to pass behind the clavicular head of pectoralis major, it pierces the clavi-pectoral fascia, crosses the axillary artery and joins the axillary vein just below the clavicular level. It may connect with the external jugular by a branch anterior to the clavicle (Williams et al.,1989).

Sometimes, the median cubital vein is large, transferring most of blood from the cephalic to the basilic vein, the proximal cephalic vein, then being absent or much diminished.

An accessory cephalic vein, arising in a dorsal forearm plexus or from the ulnar side of the dorsal venous network in the hand, joins the cephalic distal

to the elbow. It may spring from the cephalic proximal to the carpus and rejoins it later. A large oblique vein often connects the basilic vein dorsally in the forearm (Fig. 2)(Williams et al., 1989).

The Basilic Vein

The basilic vein begins medially in the hand's dorsal venous network, ascending postero-medially in the forearm and inclining forwards to the anterior surface distal to the elbow. Joined by the median cubital vein, it ascends superficial to and between the biceps and pronator teres. filaments of the medial cutaneous nerve of the forearm pass here, in front of veins. The basilic vein ascends medial and perforates the deep fascia about midway in the arm, continuing medial to the brachial artery to the lower border of the teres major, there becoming the axillary vein (Fig.5)(McMinn, 1990).