Abstract

Background: With increasing number of patients who suffered from end-stage renal disease and under long-term hemodialysis, the functioning vascular access means better prognosis and quality of life for these patients is essential.

Nowadays the autologuous arteriovenous fistula (AVF) and the synthetic arteriovenous graft (AVG) remain the major access alternatives of choice, which have the advantage of long-term survival.

Aims: To evaluate the role and usefulness of Multidetector CT angiography (CTA) and color Doppler US (CDUS) in assessment of vascular tree of AVFs and comprehensive evaluation of possible shunt complications in ESRD patients on hemodialysis.

Methodology: End-stage renal disease for which long-term hemodialysis is required for a significant percentage of the population. The arteriovenous fistula has become the most widely used mean of providing vascular access for patients on regular hemodialysis.

Conclusion: the obtained results document that Color Doppler US is readily available, noninvasive method, inexpensive, and has no radiation exposure or use of contrast material. It allows assessment of both anatomy and hemodynamics of an AVF. However the quality of images depends on the skill of the operator. Other drawbacks of color Doppler US are the inaccurate detection of central venous obstruction and the absence of an angiographic map, which may be desired for surgery.

Keywords: color Doppler US, Multidetector CT, AVFs, ESRD patients, hemodialysis.

Contents

List of Abbreviations

AA	Autogenous access.
AV	Arteriovenous
AVF	Arteriovenous fistula
AVG	Arteriovenous graft
BB	Brachio-basilic
BC	Brachio-cephalic
CDU, CDUS	Colour Doppler ultrasound
CFDU	Colour flow Doppler ultrasound
CFDUS	Colour flow Doppler ultrasound
CHD	Chronic hemodialysis
CHF	Chronic heart failure
CKD	Chronic Kidney Disease
CRF	Chronic renal failure
CT	Computed Tomography
CTA	Computed Tomography angiography
CW	Continuous wave
DASS	Dialysis associated steal syndrome.
DHIS	Distal hypoperfusion ischemic syndrome
DAVF	Direct arteriovenous fistula
DSA	Digital subtraction angiography
EDV	End diastolic velocity.
ESRD	End stage renal disease.
ESRF	End stage renal failure.
GAVF	Graft arteriovenous fistula.

HD	Hemodialysis.
HU	Hounsfeild unit
HUV	Human umbilical vein.
HUVG	Human umbilical vein graft.
IV	Intravenous
IMT	Intima media thickness.
IMN	Ischemic monomelic neuropathy
MDCT	Multidetector Computed Tomography
MDCTA	Multidetector CT angiography
MSCT	Multislice CT
PRF	Pulse repetition frequency.
PSV	Peak systolic velocity.
PTFE	Polytetrafluoroethylene.
PW	Pulsed wave.
RC	Radio-cephalic.
RC-AVF	Radio-cephalic arteriovenous fistula.
RI	Resistivity index.
ROI	Region of interest.
RRT	Renal replacement therapy.
SD	Standard deviation.
US	Ultrasound.
VA	Vascular access.
VP	Venous pressure

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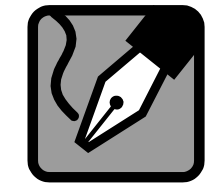

Introduction

Aim of the Work

CHAPTER 1

Anatomy of Vascular Supply of Upper Limb

CHAPTER 2

Hemodialysis

CHAPTER 3

Vascular Access in Hemodialysis