

Multidetector CT Angiography In Assessment Of Lower Extremity Arterial Occlusive Disease

THESIS

Submitted for partial fulfillment of MD degree of Radiodiagnosis

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2010

List of contents

1. Introduction and aim of the work

2. Review of literature

3. Material and methods

Thirty cases with suspected diagnosis of peripheral arterial occlusive disease will undergo lower limb angiography by multidetector computed tomography and digital subtraction angiography. This will be done in Ain Shams university hospitals, Ain Shams University specialized hospital and some private clinics.

4. Results

5. Illustrative cases

6. Discussion

7. Summary and conclusion

8. References

9. Arabic summary

Introduction and Aim of the work

Peripheral arterial occlusive disease of the lower extremities is not a frequent primary cause of mortality; however, it is an important cause of morbidity and an adverse prognostic indicator among the elderly (*kannel et al., 2004*)

Peripheral arterial disease (PAD) is a major problem among the population of those 55 years and older (*Meijer et al., 1998*)

By age 60, approximately 3-6% of men have intermittent claudication related to lower extremity arterial occlusive disease (*Dormandy et al., 2000*)

Digital subtraction angiography (DSA) has been the standard reference technique for the evaluation of peripheral vascular disease (*Hideki et al., 2003*)

Catheter- based DSA has remained the standard of reference for the evaluation of peripheral ischemia (*carlo et al., 2004*)

Digital subtraction angiography (DSA) is currently the imaging technique of choice for assessing PAD of the lower extremities. The adverse effects and associated costs of DSA have led to an intensive search for noninvasive alternatives for imaging the inflow and runoff vessels (*Thomas Schertler et al., 2005*)

Because the number of revascularization procedures performed to treat PAD is increasing (*Al-Omran et al., 2003*), the number of preoperative diagnostic imaging procedures is also increasing (*De Nederlandse et al., 2002*)

Decision making prior to surgery or percutaneous intervention depends on accurate characterization of the level, multiplicity, and severity of stenoses (*Malden et al., 1994*)

Computed tomographic (CT) angiography is increasingly used for noninvasive imaging of various vascular territories (*Jurgen et al., 2005*) The introduction of multi-detector CT (MDCT) scanners has substantially improved CT angiography by offering increased volume coverage, decreased dose of contrast medium, decreased acquisition time, and improved spatial resolution for assessment of small arterial branches, including the lower extremity arteries (*Ota et al., 2004*)

MDCT angiography permits the precise evaluation of the vascular wall itself. It can clearly depict the courses of vessels not only in patent but also in completely occluded segments; the preoperative information concerning the vascular wall, such as the degree of mural calcification and plaques, obtained with MDCT angiography is important in determining the anastomotic sites for bypass grafting. In addition to extravascular causes of occlusion may be detected by MDCT angiography (**Beregi JP et al., 1997**)

AIM OF THE WORK:

The aim of this work is to assess the arterial vascular system of the lower extremities in patients with peripheral arterial occlusive disease using multidetector -CT angiography (MD-CTA) and to compare the results with the standard of reference, intrarterial digital subtraction angiography (IA-DSA).

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المحتويات

المقدمة و الهدف من البحث

مراجعة ما سبق كتابته عن الموضوع

الحالات و طرق الفحص

يشمل البحث فحص عدد ثلاثين حالة تعاني من إنسداد شرايين الطرف السفلى بواسطة تصوير الشرايين بالأشعة المقطعية متعددة اللواقط و التصوير الرقمي للشرايين بالصبغة يجرى البحث بمستشفيات جامعة عين شمس ومستشفى عين شمس التخصصى و بعض مراكز الأشعة الخاصه.

النتائج

المناقشة

الملخص و الإستنتاج

المراجع

الملخص العربى

المقدمة و الهدف من الرسالة

تعتبر أمراض إنسداد شرايين الطرف السفلى من أهم المعوقات الرئيسية فى كبار السن .

حوالى 3-6 % من الرجال قرابة سن الستين تعاني من ألم العضلات الناتج من إنسداد شرايين الطرف السفلى .

و يعتبر التصوير الرقمي للشرايين بالصبغة هو الفحص المتعارف عليه لتقييم هذا المرض, و لكن أثاره الجانبية و تكلفته الباهظة أدت إلى البحث عن طريقة اخرى للتشخيص بحيث تتماشى مع التقدم الكبير فى وسائل علاج إنسداد الشرايين .
وتصوير الشرايين بواسطة الأشعة المقطعية أصبح وسيلة أكثر فعالية و أماناً و خاصةً بعد إدخال الأشعة المقطعية متعددة اللواقط التى ساعدت كثيراً فى تصوير الشرايين و ذلك لسرعتها الفائقة فى تصوير أجزاء أكبر من الشرايين بإستخدام كمية أقل من الصبغة مع الحفاظ على جودة الصورة و التفاصيل مما ساعد فى تصوير الشرايين الدقيقة بالطرف السفلى ؛ كما تستطيع الأشعة المقطعية متعددة اللواقط تصوير جدار الاوعية حتى فى حالات الإنسداد الكامل مما يوفر معلومات كاملة عن الاوعية الدموية قبل إجراء العمليات الجراحية .

و الهدف من هذا البحث هو تقييم الشرايين فى المرضى الذين يعانون من إنسداد شرايين الطرف السفلى و ذلك بواسطة الأشعة المقطعية متعددة اللواقط و مقارنة النتائج بالتصوير الرقمي للشرايين بالصبغة .

دور الأشعة المقطعية متعددة اللواقط في تشخيص أمراض إنسداد شرايين الطرف السفلي

رسالة

توطئة للحصول على درجة الدكتوراة
فى الأشعة التشخيصية
مقدمة من

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2010

List of Tables and Charts

Table 3.1	Comparison between Beam pitch and slice pitch	P. 70
Table 3.2	Advantages and limitations of different CTA reformations and 3D reconstruction techniques	P. 92
Table 4.1	Risk factor distribution in 30 patients with PAD.	P.110
Table 4.2	Grading of arterial lesions in 30 patients with PAOD.	P.112
Table 4.3	Variability in grading stenosis percent between CTA and DSA findings.	P.113
Table 4.4	Variability in grading stenosis length between CTA and DSA findings.	P.113
Table 4.5	Comparison between bilateral arterial affection in 30 patients with lower extremity arterial occlusion.	P.124
Table 4.6	Sensitivity, Specificity and accuracy of CTA in 30 patients with lower extremity arterial occlusion.	P.125
Chart 4.1	Sex distribution in 30 patients with PAOD.	P.108
Chart 4.2	Age distribution in 30 patients with PAOD.	P.109
Chart 4.3	Presenting symptom in 30 patients with lower extremity arterial occlusion.	P.111
Chart 4.4	Infra-renal aorta affection in 30 patients with lower extremity arterial occlusion.	P.114
Chart 4.5	The results of CTA compared to DSA in CIA affection in 30 patients with PAOD.	P.115

Chart 4.6	The results of CTA compared to DSA in EIA affection in 30 patients with lower extremity arterial occlusion.	P.116
Chart 4.7	The results of CTA compared to DSA in CFA affection in 30 patients with PAOD.	P.117
Chart 4.8	The results of CTA compared to DSA in SFA affection in 30 patients with PAOD.	P.118
Chart 4.9	The results of CTA compared to DSA in DFA affection in 30 patients with PAOD.	P.119
Chart 4.10	The results of CTA compared to DSA in Popliteal artery affection in 30 patients with PAOD.	P.120
Chart 4.11	The results of CTA compared to DSA in PTA affection in 30 patients with PAOD.	P.121
Chart 4.12	The results of CTA compared to DSA in Proneal artery affection in 30 patients with PAOD.	P.122
Chart 4.13	The results of CTA compared to DSA in ATA affection in 30 patients with PAOD.	P.123

List of Abbreviations

€	U.S. Dollar
16 D	16 Detector
2 D	Two Dimentional
3D	Three Dimensional
AAA	Abdominal Aortic Aneurysm
ATA	Anterior Tibial Artery
AVF	Arteriovenous Fistula
AVM	Arteriovenous Malformation
CFA	Common Femoral artery
CIA	Common Iliac Artery
CM	Contrast Media
CPR	Curved Planar Reconstruction
CT	Computed Tomography
CTA	Computed Tomography Angiography
DAS	Data Acquisition system
DFA	Deep Femoral artery
DPA	Dorsalis Pedis Artery
DSA	Digital subtraction Angiography
EIA	External Iliac Artery
FOV	Field of View
GI	Gastro-intestinal
HU	Hounsfield Unit
IA-DSA	Intraarterial Digital Subtraction Angiography
KVp	Kilo Volt
L.E.	Egypt Pound
LEPAD	Lower Extremity Peripheral Arterial Disease

mAs	Milliamperere Second
MDCTA	Multi-detector Computed Tomography angiography
Mg	Milligram
MIP	Maximum Intensity Projection
ml	Milliliter
mm	Millimeter
mm	Millimeter
MPR	Multi-Planar Reconstruction
MSCT	Multislice Computed Tomography
mSv	MilliSievert
PAD	Peripheral Arterial Disease
PACS	Picture archiving and communication system
PAOD	Peripheral Arterial Occlusive Disease
POP A	Popliteal Artery
PTA	Posterior Tibial Artery
PAAs	Popliteal Artery Aneurysms
PVD	Peripheral Vascular Disease
S	Second
SAR	Slice Acquisition Rate
SFA	Superficial Femoral artery
SSCT	Single Slice Computed Tomography
SSD	Surface shaded Display
TAO	Thromboangiitis Obliterans
US	Ultrasound
VR	Volume Rendering
WC	Window Center
WW	Window Width

List of Figures

Figure 1.1	Anatomy of the abdominal aorta, the inferior vena cava and their main branches.	P. 6
Figure 1.2	Anatomy of the abdominal aorta and its branches	P. 7
Figure 1.3	Anatomy of the arteries of the pelvis	P. 8
Figure 1.4	Cross-section through the thigh in the region of the adductor, or subsartorial, canal of Hunter.	P.10
Figure 1.5	Anatomy of the femoral artery and its branches	P.12
Figure 1.6	Anatomy of the popliteal fossa	P.13
Figure 1.7	Anatomy of the posterior tibial artery	P.14
Figure 1.8	The anterior tibial artery and the structures passing over the dorsum of the ankle	P.16
Figure 1.9	Anastomosis around knee joint	P.18
Figure 1.10	Anatomy of blood supply of the foot	P.19
Figure 1.11	Illustration of the peripheral arterial tree	P.21
Figure 1.12	3D volume-rendered overview image of the aorta and runoff vessels.	P.22
Figure 1.13	Axial CTA showing the abdominal aorta.	P.23
Figure 1.14	3D volume-rendered imaging showing the abdominal aorta.	P.24
Figure 1.15	Axial CTA of CIA.	P.25
Figure 1.16	Axial CTA of EIA in the pelvis.	P.25
Figure 1.17	Axial CTA of EIA under inguinal ligament.	P.26
Figure 1.18	3D Volume-rendered image showing iliac vessels.	P.26
Figure 1.19	Axial CTA of femoral artery, upper thigh	P.27
Figure 1.20	Axial CTA of femoral artery, mid thigh.	P.28
Figure 1.21	Axial CTA of femoral artery, distal thigh	P.28