Role of ct angiography versus doppler utrasonography in the assessment of lower limbischemia

Mohamed Ahmed Hussein Zayed

The ultimate goal of technologic advancements in medicine is to improve patient safety and care. Until as recently as ten years ago, catheter-directed conventional angiography and digital subtraction angiography were the main modalities available for detailed and accurate evaluation of the peripheral arterial trees, it provided sufficient anatomical details to allow surgical planning for patients with peripheral arterial disease. However the complications and patient discomfort associated with these techniques have prompted the need of less invasive technique for both initial assessment and surgical planning.105After the availability of multi-detector row CT (MDCT) adequate resolution imaging of the entire inflow and runoff arteries became possible with a single acquisition and a single intravenous contrast medium injection. CT angiography has become a robust method of diagnostic angiographic imaging. Many studies have proved its accuracy as compared to the gold standard DSA.The aim of this study is to illustrate the role of CT angiography in assessment of different arterial diseases of the peripheral extremities. This study included 20 patients, 4 of them with suspected upper limb ischemia, and 16 with suspected lower limb ischemia. All of the 20 patients underwent multi-detector row CT angiography.Through the present study examples of various applications of extremity MDCT angiography were presented to evaluate a wide range of diseases. CTA has showed useful role in exclusion of arterial pathology in 3 patients, detection and full assessment of aneurysmal diseases in 2 patients, evaluation of peripheral arterial atherosclerotic steno-occlusive disease in 8 patients, embolic phenomena in 2 cases, traumatic injury in one patient, assessment of patency and integrity of bypass grafts in 2 patients, full assessment of dissecting aorta in one case. CTA helped also in diagnosis of a case of Buerger’s disease, as well as in detecting a case of normal anatomical variant in the lower limb arteries.For better results of CT angiography in evaluating arterial diseases and injuries of vessels in the extremities, certain aspects of its use must be mastered, such as timing of contrast administration and generation and use of high-quality post-processed images.Duplex ultrasound ismainly used to evaluate patients withtypical AOD symptoms in the framework of step-by-stepdiagnostic workup (cf. Fig. 2.5), to help -in therapeutic deci-sion making, and to differentiate atherosclerotic from non atherosclerotic vascular disease (Table 2.5).