Role of Multidetector Computed Tomography in the Preoperative Evaluation of Donor Kidney

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Introduction/Background

- Multi-detector computed tomography (MDCT) is an effective, fast, relatively non-invasive method for the preoperative evaluation of renal vascular structures.
Objective/Purpose

• This prospective study aimed to explore the role of MDCT in the pre-operative evaluation of living donor kidneys.
Imaging Technique and Assessment

• The images of the donors were taken preoperatively using MDCT angiography.
  • (Toshiba aquillion 16 detector CT, 16x0.5 mm colimation, 1.0 mm slice thickness, 1.0 mm interslice gap).
• Nonionic contrast material with iodine with automatic injector was applied with a speed of 4 – 4.5 ml/s. (90 cc, 300 mg/ml)
• The contrasted images were taken in the 35th second following IV contrast material injection.
Imaging Technique and Assessment

• The images
  • The axial original images,
  • Multiplanar reconstruction (MPR)
  • Volume rendering
  • Maximal intensity projection (MIP)

• 48 adult volunteers

• Patients were examined for appropriateness for transplantation.

• Vascular findings on MDCT were compared to operative findings by Pearson’s correlation test for the operated patients
Imaging Technique and Assessment

• In the donors,
  • Renal parenchym,
  • Renal vascular structure
  • Intraabdominal pathologies

• Renal artery
  • Polar accessory
  • Hilar accessory.
  • Early branching

• The renal veins were named according to the relations with the vena cava inferior.
  • Retroaortic
  • Circumaortic
Findings and cases

• 48 patients (25 -60 age)
  • 30 males, 18 females.
• Of these patients, only 28 were found to be convenient donors.
Findings and cases

• In the parenchymal assessment
  ▪ Simple cyst
  ▪ Kidney stone
• In the arterial assessment
  ▪ Early branching (3)
  ▪ Left accessory renal artery (5)
  ▪ Right accessory renal artery (2)
  ▪ Bilateral accessory renal artery (2)
• In the venous assessment, we found 4 cases.
  ▪ They were all on the left.
  ▪ Circumaortic renal vein (1)
  ▪ Retroaortic renal vein (3).
Discussion

When assessing the donor, kidney localisation and size, renal vascular structure, and the existence of tumour diseases accompanied must be well known.

MDCT is a fast, non-invasive method with a low morbidity (1,2).

MDCT enables us to evaluate both the renal parancim and the vascular structures together (3,4).
Conclusion

- MDCT is a non-invasive, cheap, easy imaging method with a temporal and spatial high resolution.
References


