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# Role of mr angiography in evaluation of potential living kidney donors

**Mohamed Fawzy Attia**

Radiographic imaging of the kidney and its circulation is an important part in the evaluation of potential living kidney donors. Before nephrectomy, donors routinely undergo conventional arteriography for this evaluation, although conventional arteriography is currently the most accurate method for imaging blood vessels, this technique is invasive, expensive and donors may have adverse local or systemic reactions. MR angiography as a non-invasive technique would therefore be preferable for evaluation of these healthy potential donors. The objective of this work was to evaluate the role of MR angiography in studying the reno-vascular anatomy of potential living kidney donors and to compare MRA with I.V.-DSA and I.A.-DSA in evaluation of the number and location of the donor renal arteries and in identification of major reno-vascular abnormalities that may preclude safe renal donation. This study was carried out on 35 potential living kidney donors in Urology & Nephrology Center, Mansoura University. All donors were subjected to the following radiological techniques: (1) Ultrasonography. (2) U.T.P. (3) I.V.-DSA followed by I.V.U. (4) I.A.-OSA :- 7 to 10 days after I.V.-OSA. (5) MR angiography. (6) Scintigraphic renal assessment using  $^{99m}\text{Tc}$ -OTPA. The results of these techniques were compared with the operative findings reported by the surgeon in the written surgical sheet after nephrectomy. This was available for the 35 donors who were subjected to nephrectomy. The results of the study showed a sensitivity of 100% by all techniques, except IV-OSA which was 95.8% specificity 80%, 40%, 70%, 90% and overall accuracy 91.4%, 77%, 88.5%, 94.2%, by MR angiography, LV-OSA, LA-OS aortography and LA selective renal angiography respectively. The accuracy was 100%, 95.8%, 100%, 100% in detection of single artery, 80%, 40%, 70%, 90% in detection of double arteries for MR angiography, LV-OSA, I.A.-OS aortography and LA selective renal angiography respectively while the accuracy was 0% in detection of triple arteries by all techniques. Concerning MRA, the results of the 25 donors who were subjected to MIP and multiplanar reformatted images as a postprocessing, were 94.7%, 66.6%, 88%, and 100%, 83.3%, 96% as regard sensitivity, specificity and overall accuracy by MIP and MPR images respectively. -146- In conclusion, the study demonstrated that MR angiography has better sensitivity and specificity as well as overall accuracy than those of LV-OSA and similar sensitivity and better specificity than LA-OS aortography. So, we can conclude that MR angiography has a potential for replacing LV-OSA and LA-OS aortography and holds a promise as a single examination for an anatomical assessment of potential living kidney donors.

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The advantages of performing MRA rather than LV-OSA and LA-OSA include; reduction in patient discomfort, morbidity, invasiveness and radiation exposure to both the donors and medical staff. However, in equivocal and indeterminate cases, LA-OSAortography plus or minus selective renal angiography are recommended for better assessment, on the other hand, the combination of MIP and multiplanar reformation images, in spite of addition of few minutes to the time of interpretation, permits better visualization of eccentrically located stenosis, superimposition of structures which may simulate the presence of stenosis and signals in adjacent structures as the veins, which all corrupt the image quality as seen on MIP images alone.