SUMMARY AND CONCLUSION

Conventional angiography is the mainstem of renal vascular imaging but it is time and effort consuming and is associated with risk of catheterization and high dose of radiation. For these reasons, other less invasive modalities have been emerged.

Spiral CT angiography is an accurate modality, which is minimally invasive and has many advantages including diminished patient morbidity. The ability to create multiplanar and 3-D images is an important diagnostic advantage

The application of new technology of multidetector spiral CT (MDCT) made spiral CT very effective in the examination of renal vessels. The advantage of MDCT relevant to single-section helical CT is the ability to acquire high resolution along the z-axis of the patient in a shorter acquisition time. More over the MDCT has the ability to cover larger scan area than the single-section CT.

Early detection of renovascular hypertension secondary to renal artery stenosis is important to be diagnosed, as it is a curable disease. Spiral CT is an effective method in detection of renal artery stenosis.

Another advantage of spiral CT over conventional angiography is that with spiral CT angiography the vessel lumen and the vessel wall with possible calcifications and atherosclerotic plaques are both

visualized .As a result the relationship between the stenosis of the renal artery and the wall of the aorta is assessed more accurately, allowing distinction between ostial and truncal stenosis.

Spiral CT Angiography would be an ideal study in the evaluation of living potential kidney donors because the surgeon needs to know not only the arterial map of the renal arteries (number of arteries, location of arteries and branching pattern) but the renal venous system (number of veins, branching pattern, and location). CT Angiography can accomplish all of these demands in a single 5-minute study instead of the classic multiexam sequence (IVP, catheter angiogram).

CT scan currently is the procedure of choice for diagnosing renal vein thrombosis noninvasively. Intravenous infusion of contrast material assists in visualizing the renal veins and differentiating between bland thrombus and malignant thrombus. CT scan also demonstrates the presence of renal cell cancer.

The early diagnosis of ‘‘nutcracker phenomenon’’ is important to promptly remove the venous compression and thus to avoid complication such as the thrombosis of the left renal vein. Spiral CT angiography represents a useful noninvasive tool in diagnosis of nutcracker phenomenon.

CT angiography had a sensitivity of 100% and specificity of 96.6% for detection of arteries crossing the ureteropelvic junction (UPJ).

In cases of spontaneous renal hemorrhage without an apparent cause (vasculitis, coagulopathy), a careful CT study should be performed to exclude renal cell carcinoma.

CT is highly sensitive for detecting renal tumors and is the diagnostic modality of choice. For evaluation of a renal mass a multiphase study is needed which may include noncontrast scans, arterial phase scans, venous phase scans and delayed scans (3-4 minutes post injection)

A potential disadvantage of spiral CT angiography is that a relatively large volume of contrast material (120 – 150 ml) is needed for adequate opacification of the renal arteries. The use of a large volume of contrast material increases the risk of inducing nephrotoxicity. In addition, preexisting renal dysfunction is a risk factor in the development of contrast material – induced nephrotoxicity.

We can conclude that spiral CT angiography with the ability to create multiplanar and 3-D images could be used as alternative method for examination of renal vessels instead of conventional angiography which is invasive, costly and potentially hazardous procedure. The technology of multislice CT made the spiral CT more effective by improving the spatial, temporal, and contrast resolution of the images and increasing the diagnostic accuracy of the examination.