

**The Value of Duplex Ultrasound versus Contrast Enhanced CT Scan in the Follow-up of Endoluminally Repaired Abdominal Aortic Aneurysm: a Blinded Comparison**

Kamal D M, FRCS(C)\* Steinmetz O K, FRCS(C)\*\* Obrand DI, FRCS(C)\*\*\*

**Objective:** 1) To compare the accuracy of Duplex ultrasound to contrast-enhanced CT scan with respect to aneurysm sac diameter measurement and endoleak detection in patients with endovascular abdominal aortic aneurysm repair (EVAR). 2) To evaluate whether contrast-enhanced ultrasound (Levovist) improves the accuracy of color duplex ultrasound for the detection of endoleaks.

**Setting:** Two McGill University Teaching Hospitals (Royal Victoria & Jewish General) in the period between February 1998 and December 2000.

**Design:** Prospective, Comparative, Data collection and analysis.

**Method:** Fifty-one patients who had endoluminal repair of infrarenal abdominal aortic aneurysm were evaluated concurrently with both contrast enhanced CT scan and duplex ultrasonography. By the end of the study period, 89 concurrent results were available for diameter measurements and 86 for endoleak detection.

In addition, at one hospital 38 contrast enhanced (Levovist) duplex examinations were performed after the initial non-enhanced duplex evaluation was completed. The findings of the contrast enhanced examination were compared to the non-enhanced examination.

Anteroposterior (AP) and transverse (T) aneurysm diameters were compared between CT and duplex ultrasound. The presence or absence of endoleak was also defined by both modalities.

**Result:** Diameter measurements were consistently larger by CT [mean (SD) CT - duplex AP diameter difference (cm) = 0.25 (0.34) cm, p=0.001]. Changes in aneurysm diameters between serial scans were comparable between CT and duplex.

For endoleak detection, the sensitivity, specificity, negative and positive predictive values for duplex ultrasound were 50%, 86.7%, 61.9%, and 82% respectively when compared to contrast enhanced CT. (Kappa coefficient (95% confidence interval) = 0.4 (0.2-.06), (P <0.05).

**There were 21 discrepancies in endoleak detection between the 2 imaging modalities. Three discrepancies were found in aneurysms that had increased in size from baseline and were detected by CT scan alone. The detection of endoleaks by duplex was not influenced by the addition of ultrasound contrast.**

**Conclusion: Duplex ultrasonography had comparable accuracy with CT for evaluation of aneurysm diameter post EVAR. There was only moderate agreement between duplex and CT for detection of endoleaks. CT was more reliable for detecting endoleaks associated with aneurysm growth. Contrast enhanced duplex did not change the accuracy of duplex ultrasonography for detection of endoleaks.**

*Bahrain Med Bull 2008; 30(3):*