**Comparison of Internal Carotid Artery Stenosis Grading by CT Angiography and Doppler Ultrasound**

Background

The 2009 recommendations for reporting carotid ultrasound investigations, aimed to improve and standardise UK practice. However, confusion remains as to which measures provide the most accurate diagnosis, particularly around the >50% and >70% stenosis levels.

Although not a gold standard, CT angiography is considered reliable for carotid imaging. This study aims to compare the results of CT angiography with the 2009 recommendations and the 2003 SRU consensus for carotid ultrasound.

Methods

A retrospective evaluation of carotid artery imaging was performed at the University Hospital of Wales, Cardiff. Scan results for 136 patients who had undergone both carotid CT angiography and carotid Doppler imaging were analysed. The ultrasound scans were graded into <50%, 50-69%, 70-89% and 90% stenosis bands, using the 2003 SRU criteria of PSV and B-mode appearance. 46 patients had velocity criteria measured for PSV, PSVR and St Mary’s ratio, and were also graded using the 2009 UK recommendations. The CT angiography scans were graded using NASCET criteria. The stenosis grading by CT angiography, and Doppler ultrasound using the 2003 and 2009 recommendations, were compared.

Results

Overall, the ultrasound grading using 2003 SRU criteria matched the CT angiography grading in 93% of cases in the >70% stenosis bands. Doppler grading using SRU recommendations matched the CT angiography grading in around 20% more cases than the 2009 UK recommendations.

Conclusion

There is a degree of variability in the grading of carotid artery disease by CT angiography and Doppler ultrasound. Grading of ultrasound scans using SRU 2003 criteria provided the best correlation with CT. However, CT is not a gold standard, and more evidence is needed to improve the reliability of carotid imaging.