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SAWWANEE ASAVAPHATIBOON : COMPARISON OF THE 3D TIME OF FLIGHT AND THE 3D PHASE CONTRAST MAGNETIC RESONANCE ANGIOGRAPHIC TECHNIQUES WITH DIGITAL SUBTRACTION ANGIOGRAPHY IN INVESTIGATION OF THE CERVICAL CAROTID ARTERY. THESIS ADVISOR: JIRAPORN LAOTHAMATAS, M.D., MANUS MONGKOLSUK, M.Sc., SIRINTARA PONGPETCH, M.D., RATANA PIRABUL, M.Sc., 88 p. ISBN 974-661-543-2

Presently, the diagnosis of great vessel abnormality in the neck area by using Magnetic Resonance Angiography (MRA) is widely acceptable because of its noninvasiveness. Furthermore, MRA provides high in diagnostic accuracy as compared to conventional carotid angiography or digital subtraction angiography (DSA).

This prospective study was conducted with 30 patients suffering from various diseases, who underwent DSA investigation at Ramathibodi Hospital (age range 13-73 years, mean age 43 years; 16 female patients, 14 male patients). These patients were referred for MRA study. All patients underwent 3D time of flight MRA (3D TOF-MRA) and 3D phase contrast MRA (3D PC-MRA) at different velocity encoding (VENC) values by measuring the luminal diameter of the cervical carotid artery at three assigned locations. The result of each MRA technique was compared with that of DSA by using statistical analysis.

The results demonstrate that the luminal diameter as determined by 3D PC-MRA at VENC of 50 and 60 cm/sec correlates better with that of DSA than the diameter as measured by 3D PC-MRA at VENC of 80 cm/sec. The luminal diameter as determined by 3D PC-MRA at the VENC of 50 and 60 cm/sec is better correlated with that determined by DSA than the luminal diameter as determined by 3D TOF-MRA, and the errors in the data are mostly underestimated values.