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Scientific Abstract

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Role Of Double Inversion Recovery Sequence Of MRI In The Detection Of Subacute Subarachnoid Hemorrhage

Zahra Mardanshahi¹, Maryam Tayebi², Sajad Shafiee³, Maryam Barzin⁴, Misagh Shafizad³, Reza Alizadeh-navaei⁵

¹Radiology department, Mazandaran University of Medical Sciences, Iran, Islamic Republic of; ²Auckland bioengineering institute, University of Auckland, Auckland, New Zealand; ³Neurosurgery department, Imam Khomeini hospital, Mazandaran University of Medical Sciences, Sari, Iran; ⁴Negin Medical Imaging Center, Sari, Iran; ⁵Gastrointestinal Cancer Research Center, Mazandaran University of Medical Sciences, Sari, Iran

Objectives: The diagnosis of subarachnoid hemorrhage (SAH) especially at the subacute stage is still a challenging issue using conventional imaging modalities. We designed a study to evaluate the role of double inversion recovery (DIR) sequence of MRI compared with the conventional GRE-T2* and SWI sequences in the diagnosis of subacute SAH.

Methods & Materials: This prospective study was conducted on 21 patients with SAH, which were diagnosed using CT scan at the initial step. In the third week after the injury (14-20 days), all patients underwent an MRI exam including T2*, SWI, and DIR. All images were reported by two radiologists separately, who were blind to the history of patients. They assessed the brain images based on 6 different anatomical regions and diagnosed the presence or absence of the hemorrhage in those areas.

Results: DIR sequence found 20 patients with at least one subarachnoid signal abnormality, while 17 and 15 patients presented SAH areas that were identified by SWI and T2*-W techniques, respectively. The highest rate of inter-observer consensus by DIR sequence was found in the interhemispheric fissure and perimesencephalic area (k=1, P value <0.001). Weak agreement found in frontal-parietal convexity (k=0.447, P value=0.004) using SWI, and in posterior fossa by T2*-W sequence (k=0.447, P value= 0.018)

Conclusion: In conclusion, DIR sequence has higher detection ability to identify signal abnormalities than T2* and SWI sequence in subacute SAH patients, and is suggested as a promising imaging technique to find hemorrhagic areas without considering the anatomical distribution of SAH.