

# Accuracy of Non-Echo Planar Diffusion Weighed Magnetic Resonance Imaging to detect Cholesteatoma in routine clinical healthcare: A Diagnostic Study

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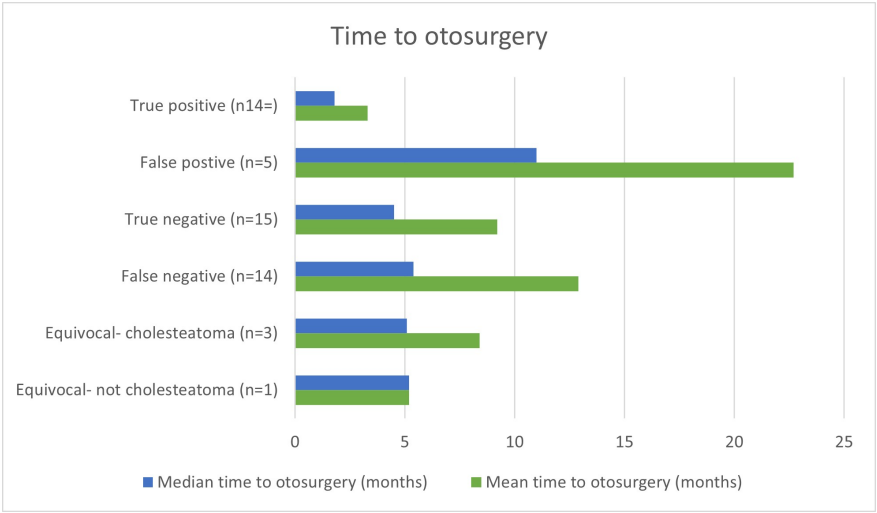
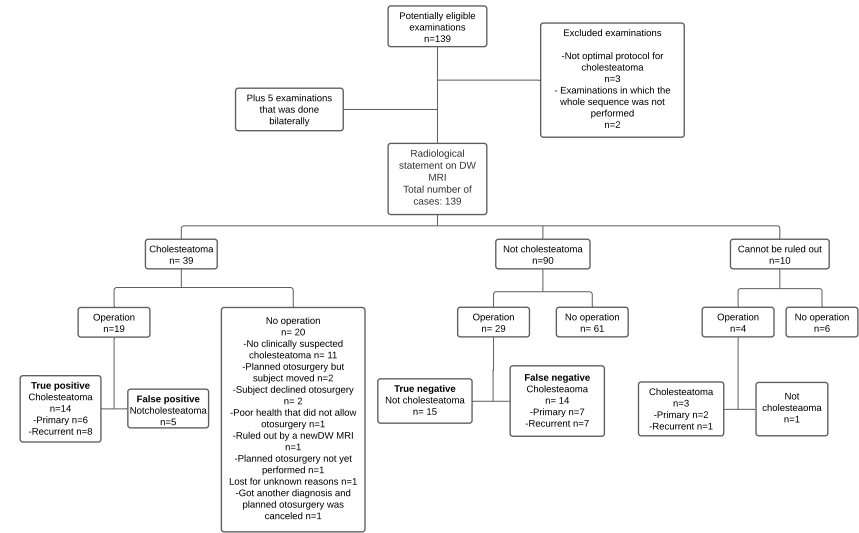
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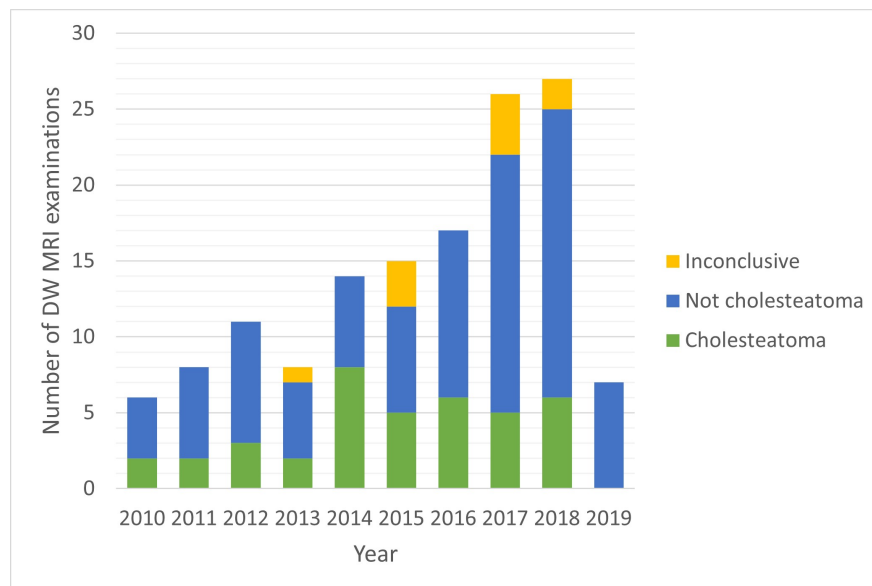
## Abstract

**Objectives:** To determine the accuracy of Non-Echo-Planar Diffusion Weighed Magnetic Resonance Imaging (non-EPI DW MRI) in diagnosing cholesteatoma in routine clinical healthcare - a comparison to otosurgery outcome. **Method:** A retrospective diagnostic study including all subjects examined with middle ear non-EPI DW MRI in two regions in northern Sweden between October 2010, when the use of non-EPI DW MRI began, and March 2019 when the search was made. Examinations not performed as non-EPI DW MRI were excluded. Sensitivity, specificity, positive predictive value, negative predictive value, and likelihood ratios were calculated using non-EPI DW MRI as the index test and diagnosis from otosurgery as the reference standard. **Results:** Fifty-two subjects with suspicion of cholesteatoma underwent non-EPI DW MRI and subsequent otosurgery after examination. Non-EPI DW MRI had a sensitivity of 0.50, specificity of 0.75, positive predictive value of 0.74, negative predictive value of 0.52, positive likelihood ratio of 2.0, and negative likelihood ratio of 0.67. **Discussion:** The diagnostic accuracy of non-EPI DW MRI does not reach acceptable levels to be reliable in the existing everyday clinical setting. The accuracy of the examination increases when interpreted by an experienced radiologist and when using the definition of cholesteatoma recommended by The European Academy of Otology and Neurotology and The Japanese Otological Society.

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