

Introduction

Cholesteatoma Diagnosis depends on the its high keratin content of which makes them highly hyperintense at high b value (800-1000 sec/mm²) and with low values on apparent diffusion coefficient (ADC) map similar to that of brain parenchyma which is the same signal characteristics of intracranial epidermoid cysts. Diagnosis of recurrent cholesteatoma in an operated middle ear cavity may be difficult. HRCT scan and conventional MRI have low specificity when it comes to differentiating granulation tissue from relapsing cholesteatoma due to lack of characterization of the detected soft tissue in the surgical cavity. DWI MRI accurately differentiates recurrent cholesteatoma from infected post operative granulation tissue avoiding unnecessary second look operations. Two distinct sequences can be used for DW-MRI in the evaluation of cholesteatoma: echo-planar images (EPI) and non-echo-planar images (non-EPI).

Results

Table 1: Showed the results of EPI and Non -EPI

N= 30 patients	EPI-DWI	Non-EPI DWI
Number Of True Positive Cases	13	20
Number Of True Negative Cases	8	7
Number Of False Positive Cases	2	3
Number Of False Negative Cases	7	0

Table 2: Showed the sensitivity, specificity, positive and negative predictive values using SSPS statistics.

N= 30 patients	EPI	Non-EPI
Sensitivity	65%	100%
Specificity	80%	70%
Positive predictive value	86.6%	86.9%
Negative predictive value	53.3%	100%
Accuracy	70%	90%



Figure 1: (A) Axial EPI DWI revealed no high signal of diffusion restriction with susceptibility artifact and low resolution. (B) Non- EPI revealed a high signal in right middle ear cleft (C) ADC revealed low signal denoting diffusion restriction and cholesteatoma.

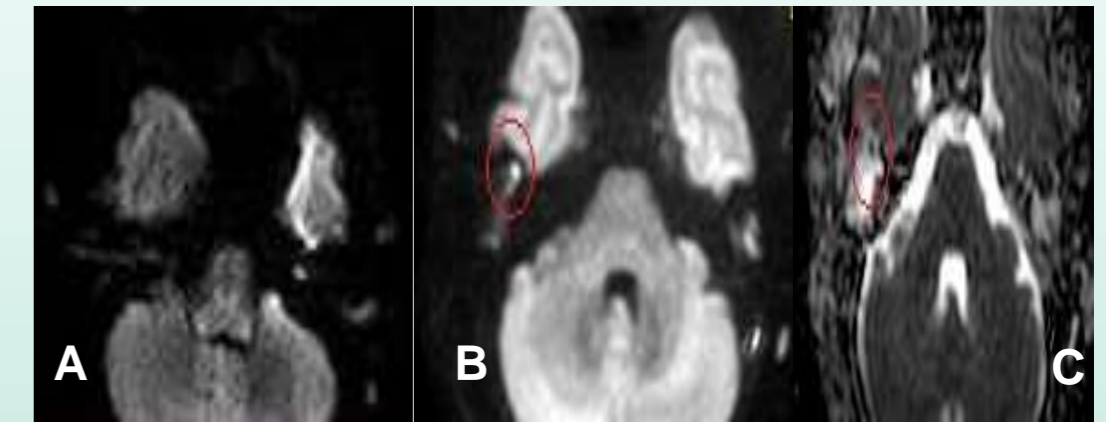


Figure 2: (A) Axial EPI DWI show no high signal in right middle ear (B) Axial Non- EPI DWI showed a small focus of high signal in right middle ear cleft, (C) ADC revealed corresponding low signal.

Conclusion

In comparison to EPI DWI, non-EPI DWI is a highly helpful magnetic resonance imaging (MRI) method that has very good sensitivity and specificity for the identification of cholesteatoma in the pre- or postoperative middle ear. EPI DWI, a common sequence in brain imaging, is not recommended for the diagnosis of middle ear cholesteatoma because of its limited sensitivity.

Aim of the Work

The aim of this study was to analyse the value of different diffusion weighted magnetic resonance techniques in the diagnosis of middle ear cholesteatoma.

Subjects and Methods

The research included 30 patients referred from the outpatient clinic of ENT department with suspected cholesteatoma to the radiology department of Alexandria Main University Hospital for MR imaging (EPI DWI and non - EPI DWI). The Radiological findings were correlated with the intraoperative findings.