ORIGINAL ARTICLE

To Determine Positive Predictive Value of Magnetic Resonance Imaging in Detection of Retinoblastoma Taking Histopathology as a Gold Standard

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ABSTRACT

Aim: To determine the positive predictive value of magnetic resonance imaging in the detection of retinoblastoma taking histopathology as gold standard

Study design: Descriptive Cross-Sectional in department of Diagnostic Radiology, Children's Hospital , Lahore.

Duration: From 07-05-2012 to 06-11-2012.

Methodology: A total of 150 cases were included in this study. Mean age of the patients was 23.61±7.49 months. Standard MRI technique of orbit for evaluation of patients of retinoblastoma was included, comprising T1W and T2W images with axial and sagittal reformatting.

Results: True positive cases were 109 (72.6%) and false positive cases were 41 (27.4%). Positive predictive value was 72.6%.

Conclusion: MRI has high positive predictive value in the detection of retinoblastoma taking histopathology as gold standard.

Keywords: Retinoblastoma, Positive predictive value, MRI

INTRODUCTION

Retinoblastoma is the malignant tumour of immature retinoblasts. It is the most common eye tumor of childhood and can be easily cured[1]. It usually presents in patients before 5 years of age[2], mostly unilateral or bilateral leukocoria[3], and may present with squint, strabismus, orbital cellulitis and loss of vision. Early diagnosis is required in patients suffering from retinobolastoma. Suspected patients of retinoblastoma may be investigated by ophthalmoscopy, Computed Tomography (CT) scan or Magnetic resonance imaging (MRI) for early and accurate diagnosis[5]. These are also valuable in differentiating retinoblastoma from lesions that simulate it[6].

METHODOLOGY

Inclusion Criteria: Patients referred from ophthalmology department with clinical signs and symptoms of retinoblastoma, i.e., leukocoria, strabismus, proptosis, inflammatory eye, etc. or evidence of calcification on ophthalmoscopy.

Exclusion Criteria*:* Patients who do not give informed consent *,* Patients undergoing any eye surgery *and* Patients with recurrent tumor

Standard MRI technique of orbit for Retinoblastoma would include survey images (axial, sagittal) followed by T1W and T2W images. Standardized retinoblastoma MRI protocol was adopted as per consensus reached by the members of European Retinoblastoma imaging Collaboration (ERIC). Data was stored and analyzed by using computer software SPSS 16.

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RESULTS

Table 1: Age distribution

Age (month)	n	%age
12-24	84	56.0
25-36	55	36.7
≥ 37	11	07.3
Total	150	100.0
Mean ± SD	23.61±7.49	

Table 2: MRI vs histopathology in Detecting Retinoblastoma

MRI	Histopathology (Gold Standard)		Total
	Positive	Negative	
Positive	(TP) 109(72.6%)	(FP) 41(27.4%)	150
Negative	(FN) zero	(TN) Zero	zero
Total	109	41	150

PPV=TP/TP+FP=72.6%

DISCUSSION

In present study, positive predictive value of MRI in the detection of retinoblastoma was 72.6%. Regarding retinoblastoma, the data about diagnostic accuracy of MRI is little. Barkhof et al and Schueler et al demonstrated their results about the MRI findings in comparison with histopathologic findings after enucleation[7,8]. In both studies, the number of patients included were small. Barkhof et al[8] analyzed 18 patients with a 0.6-T MRI unit with thicker sections and no fat suppression. Schueler et al[7] compared preoperative MRI with histologic findings after enucleation in 21 cases. Because of the increase in spatial and contrast resolution, possibilities for the detection of smaller lesions of intraocular retinoblastoma appeared promising.

CONCLUSION

MRI proved high positive predictive in the detection of retinoblastoma taking histopathology as gold standard.

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