Comparison of Half-Fourier Acquisition Single-Shot Turbo Spin Echo (HASTE) versus Echo-Planar Imaging (EPI) Diffusion-weighted Imaging for Retinoblastoma, and correlation with prognostic histopathological parameters

SUPPLEMENTARY FILES

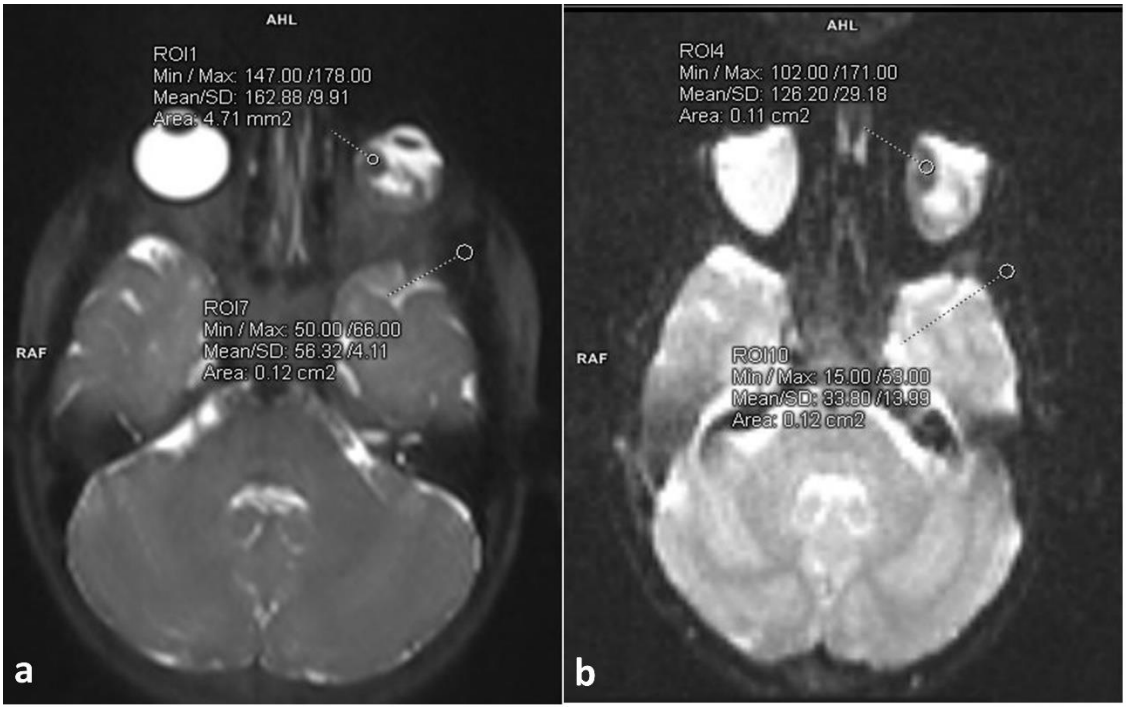
Supplementary Table 1 – Parameters for DWI techniques

Parameter	**EPI-DWI**	**HASTE-DWI**
TR (msec)	3400	2000
TE (msec)	100	105
FOV (mm)	200	200
NEX	3	10
Matrix size	128x128	288x384
Section thickness (mm)	3	3
Acquisition time	1 min. 14 sec.	14 min. 6 sec.

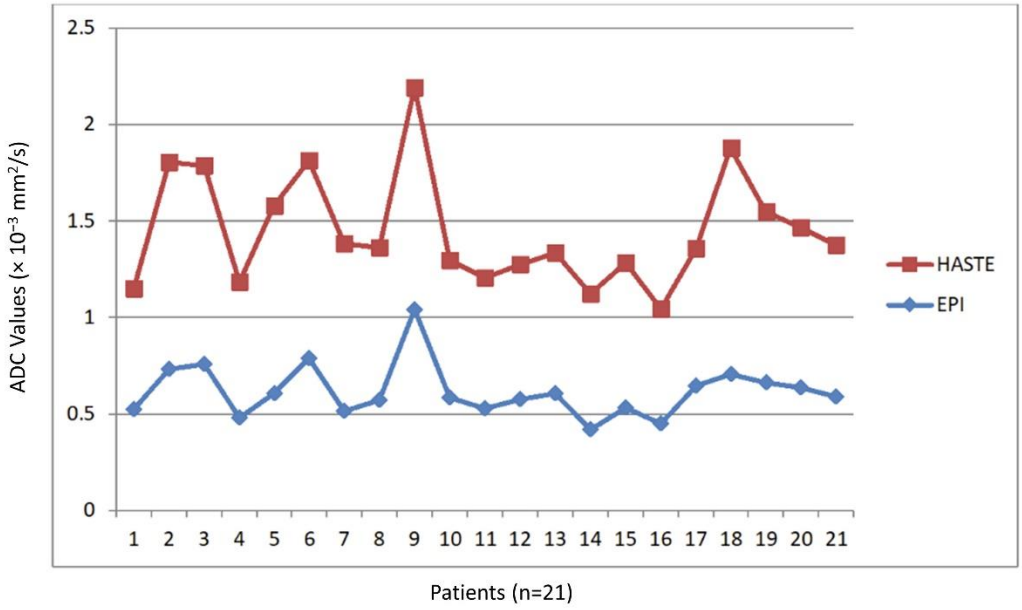
Supplementary Table 2: Comparison of RB tumor ADC values obtained in present study with previous studies.

	MRI strength; DWI technique	Sample size (n)	Mean tumor ADC value (x 10^{-3} mm^2/s)	Tumor Grade				Tumor size			Optic nerve invasion				Choroid Invasion			Anterior eye segment enhancement		
				Well-differentiated	Moderately-differentiated	Poorly-differentiated	*P* value	Large	Small	*P* value	Absent	Prelaminar	Postlaminar	*P* value	Present	Absent	*P* value	Present	Absent	*P* value
Present study	1.5T, EPI	21	0.62 ± 0.14	-	0.65 ± 0.09	0.59 ± 0.16	0.37	0.58 ± 0.11	0.66 ± 0.16	0.2	0.65 ± 0.17	0.64 ± 0.07	0.52 ± 0.04	0.35	0.57 ± 0.11	0.68 ± 0.15	0.086	0.70 ± 0.18	0.58 ± 0.10	0.056
Present study	1.5T, HASTE	21	0.83 ± 0.17	-	0.89 ± 0.18	0.79 ± 0.16	0.22	0.78 ± 0.14	0.89 ± 0.19	0.14	0.88 ± 0.20	0.86 ± 0.13	0.69 ± 0.05	0.14	0.81 ± 0.18	0.85 ± 0.16	0.66	0.91 ± 0.23	0.80 ± 0.13	0.15
Razek et al (6)	3T, EPI	72	0.49 ± 0.12	0.54 ± 0.20	0.51 ± 0.07	0.44 ± 0.07	0.007	0.38 ± 0.11	0.49 ± 0.08	0.015	0.52 ± 0.10	0.39 ± 0.23	0.38 ± 0.11	0.003	0.48 ± 0.13	0.47 ± 0.15	0.661	-	-	-
Cui et al (7)	3T, EPI	53	-	0.91 ± 0.13	-	0.74 ± 0.14	0.002	0.66 ± 0.15	0.81 ± 0.14	0.010	0.82 ± 0.14	0.78 ± 0.16	0.68 ± 0.15	0.035	0.78 ± 0.17	0.76 ± 0.13	0.629	-	-	-
Sepahdari et al (8)	1.5T, 3T, EPI	15	0.93 ± 0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
de Graaf et al (14)	1.5T, HASTE	17	1.03 [0.72 – 1.22]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

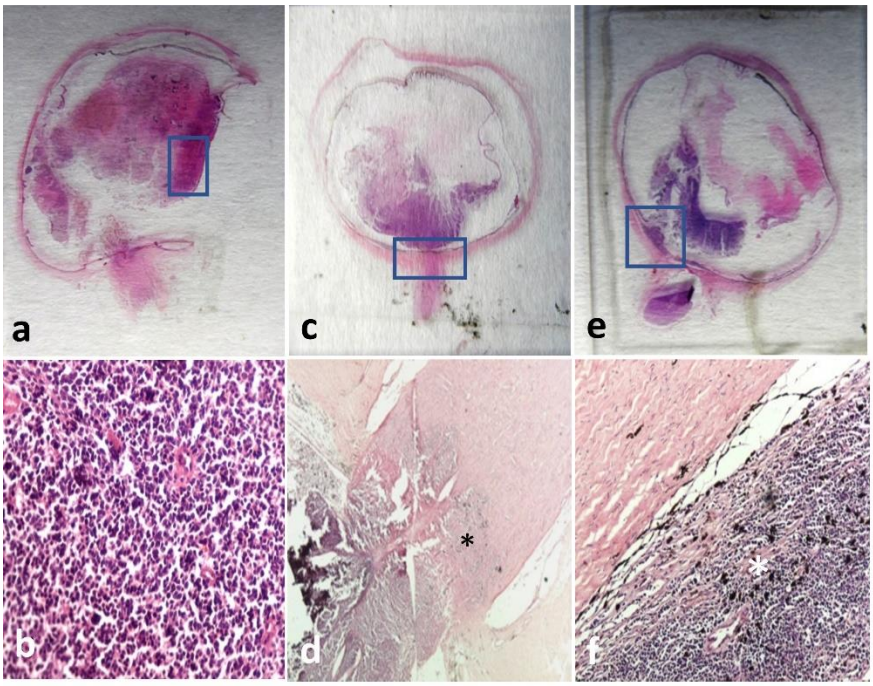
Supplementary Figures



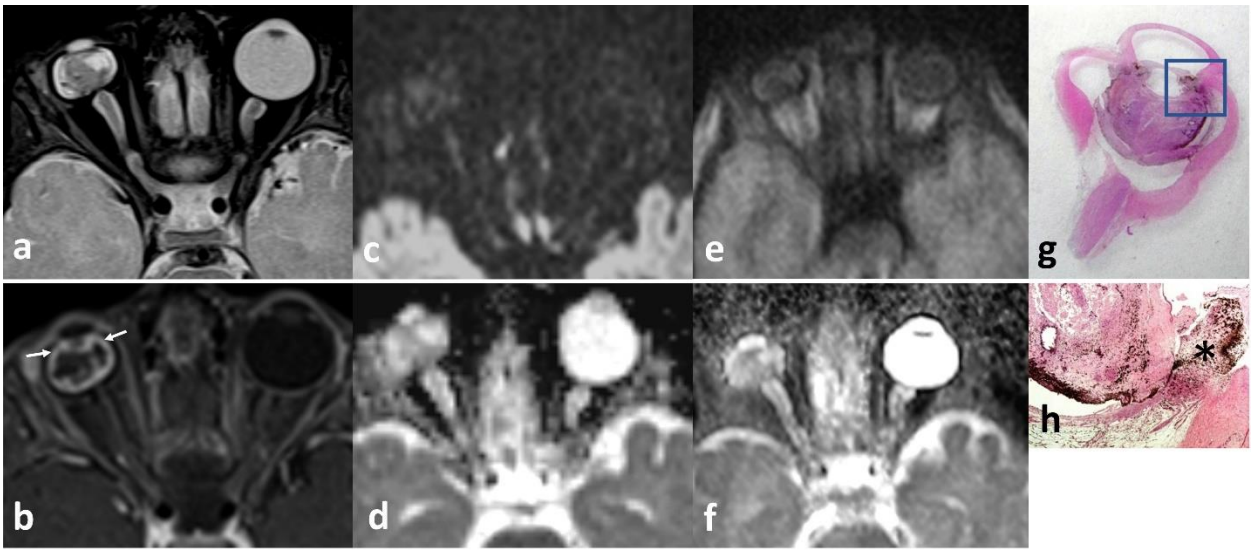
Supplementary Figure 1 - ROIs drawn on the tumor and temporalis muscle on b=0 s/mm2 on (a) HASTE-DWI and (b) EPI-DWI images. Note the geometric distortion of the orbits on EPI-DWI images.



Supplementary Figure 2 – Comparison of ADC values of EPI and HASTE-DWI (n=21).



Supplementary Figure 3: Histopathological images of the tumor
Whole mount (a) specimen of the involved eye of the same patient as in Figure 3, alongwith photomicrograph in inset (b) shows poorly differentiated retinoblastoma with densely packed cells and without any rosette formation (Hematoxylin & Eosin stain x 200). Whole mount (c) specimen of the involved eye of the same patient as in Figure 4, alongwith photomicrograph in inset (h) showed retrolaminar invasion of optic nerve (asterisk) by tumor cells (Hematoxylin & Eosin stain x 40). Whole mount (e) specimen of the involved eye of the same patient as in Figure 5, alongwith photomicrograph in inset (f) showed massive choroid invasion (asterisk) by tumor cells (Hematoxylin & Eosin stain x 40).



Supplementary Figure 4 – Anterior eye segment enhancement on MRI.
Axial T2W image(a) shows a heterogeneously hypointense small mass in the posterior segment of right eye globe with reduced eye globe size, suggestive of pthisis. Axial post contrast T1W image (b) at the same level shows thickening and abnormal enhancement in iris (arrows), suggestive of rubeosis iridis. EPI (c) and HASTE (e) axial DWI images (b-value, 1000 s/mm^2) at same level show intermediate signal intensity in the mass with corresponding mild hypointensity on ADC maps (d) and (f), respectively for EPI and HASTE DWI, suggestive of mild diffusion restriction. Mass showed high ADC values on both EPI and HASTE DWI (mean ADC value being 1.04×10^{-3} mm^2/s and 1.15×10^{-3} mm^2/s for EPI and HASTE DWI respectively). Whole mount (g) specimen of the same eye alongwith photomicrograph in inset (h) showed marked uveal proliferation (asterisk) alongwith large area of necrosis (not shown) [Hematoxylin & Eosin stain x100].