

STUDY OF POSTERIOR FOSSA TUMORS BY HIGH RESOLUTION MRIP. Sree Hari¹, J. S. Aswini Jyoth², Madhavi Thatipamula³¹Associate Professor, Department of Radiology, Osmania General Hospital and Osmania Medical College, Hyderabad, Telangana.²Assistant Professor, Department of Radiology, Osmania General Hospital and Osmania Medical College, Hyderabad, Telangana.³Post Graduate, Department of Radiology, Osmania General Hospital and Osmania Medical College, Hyderabad, Telangana.**ABSTRACT****INTRODUCTION**

Magnetic Resonance Imaging (MRI) is the imaging modality used for the assessment of infratentorial neoplasms. Although Computed Tomography (CT) provides better demonstration of small or subtle calcifications within tumors.

OBJECTIVES

Study is done to assess the potential of MRI in characterisation of different tumors in posterior fossa by evaluating various unenhanced and gadolinium enhanced sequences and to compare high resolution FSE MRI sequences with routine FSE MRI sequences in diagnosing posterior fossa brain tumors. Also correlate findings on Magnetic Resonance Imaging with Pathological diagnosis.

MATERIALS AND METHODS

A total of 52 patients were diagnosed by CT brain as having posterior fossa brain for a year of 2 years were included in the study. In all studies MR imaging was performed with a clinical 1.5 T system (General electrical medical systems). A dedicated phased-array coil was used.

RESULTS

The age group ranged from 1 year to 60 years, majority were between 1 to 20 years (39%). Slight male preponderance was seen (males 29, females 23). Commonest tumor encountered in our study was vestibular schwannoma. DWI alone can differentiate different pediatric posterior fossa brain tumors. One case of pilocytic astrocytoma showed solid lesion instead of typical cystic lesion with mural nodule. One case AT-RT showed 2 lesions one in cerebrum, one in CP angle. Common feature being intra-axial lesion involving cerebellum. MRI was able to predict diagnosis in 50 of the 52 tumors.

CONCLUSION

Magnetic Resonance Imaging was found to be a highly sensitive imaging procedure and method of choice for posterior fossa brain tumors.

KEYWORDS

Computed tomography, Multiplanar imaging, Vestibular schwannoma.

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INTRODUCTION: The infratentorial region houses the brainstem and cerebellum. Tumors can arise from the brain tissue itself, the cranial nerves, the meninges or the skull. Furthermore, the posterior fossa can be invaded by neoplasms and infections from the head and neck regions. Infratentorial tumours account for 50–55% of all brain tumours in children.^(1,2) Infants (children younger than 1 year of age) are the exception, in whom supratentorial tumours predominate. The highest frequency of posterior fossa tumours is seen between 2 and 5 years of age (>60%). In the second decade of life, the incidence of the

infratentorial tumours decreases and conversely the incidence of supratentorial tumours increases. The ratio is almost equal.

Most of the infratentorial tumours are represented by tumours of the cerebellar hemispheres and brainstem; the tumours of the fourth ventricle rank in third place and then follow meningeal tumours and tumours of cranial nerves and of skull base structures.^(3,4) Tumours of the cerebellar hemispheres and brainstem are represented by glial tumours of various tissue differentiations. Gliomas (astrocytomas of cerebellar hemispheres and brainstem, ependymomas of the fourth ventricle) are related to the most frequent infratentorial tumours in children neuro-oncological disease. Primary neuro-ectodermal tumours are second most common (medulloblastoma, ependymoblastoma, neuroblastoma) and are followed by choroid plexus tumours (papilloma, carcinoma), metastases and cranial tumours (rhabdomyosarcoma, chordoma, chondrosarcoma).

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In children, medulloblastomas accounts for approximately one-third, cerebellar astrocytomas account for another one-third, brain stem gliomas represent another one-fourth, whereas one-eighth of pediatric infratentorial neoplasms are ependymomas.⁽⁵⁾ Extra-axial tumours are more frequent in adults; neurinomas and meningiomas and epidermoid cysts follow them. Only 15–20% of all intra-axial masses in adults are infratentorial. Among them, metastasis are the commonest followed by hemangioblastoma and glioma. Up to 20% of intracranial metastases seen in adults are in the posterior fossa.⁽⁶⁾

Magnetic Resonance Imaging (MRI) is the imaging modality used for the assessment of infratentorial neoplasms. Although Computed Tomography (CT) provides better demonstration of small or subtle calcifications within tumors, MRI provides superior delineation of the extent of the tumor due to its greater soft tissue contrast, multiplanar imaging capability and ability to obtain complementary information with T1 and T2 weighted images.⁽¹¹⁾ The high contrast resolution and multiplanar capabilities of MR make possible accurate correlation of pathology with the complex anatomy of this region with MRI we can avoid beam hardening artefacts which appear on CT. Gadolinium enhancement is often helpful to identify and characterize lesions. Once a mass is identified, it must be determined whether it is intra-axial or extra-axial in location. Extra-axial lesions typically displace normal brain structures resulting in an enlarged ipsilateral cistern. A well-defined margin separates extra-axial tumor from surrounding brain, while intra-axial masses do not have such clear cut demarcation and blend into the normal brain. CSF-vascular cleft is noted between an extra-axial mass and adjacent normal brain. The vessels may be normal pial vessels or abnormal draining veins.

Our study is done to assess the potential of MRI in characterisation of different tumors in posterior fossa by evaluating various unenhanced and gadolinium enhanced sequences and to compare high resolution FSE MRI sequences with routine FSE MRI sequences in diagnosing posterior fossa brain tumors. Also correlate findings on Magnetic Resonance Imaging with Pathological diagnosis.

MATERIALS AND METHODS: A total of 52 consecutive patients who were referred to the Department of Radiodiagnosis, Osmania General Hospital and were diagnosed by CT brain as having posterior fossa brain tumors from December 2012 and September 2013 were included in the study after informed consent.

In all studies MR imaging was performed with a clinical 1.5T system (General electrical medical systems). A dedicated phased-array coil was used.

Sequences:

1. Routine brain sequences: Field of view 24cm, Slice thickness 5mm with interslice gap of 1.5mm, number of

excitations (NEX) = 1 (a) axial, sagittal, coronal T2 FSE with TR/TE 4800/95, matrix size 384×320 (b) axial T1 FSE with TR/TE 540/16, matrix size 320×192 (c) axial FLAIR with TR/TE 8400/117, matrix size 384×384.

2. High resolution sequences: Field of view 18cm, Slice thickness 3mm with no interslice gap, number of excitations (NEX) = 1 (a) axial, sagittal, coronal with T2 FSE TR/TE 4800/84, matrix size 512×512 (b) axial T1 FSE with TR/TE 560/16, matrix size 320×160 (c) axial FIESTA TR/TE 12.9/6.4, matrix size 320×192 (d) GRE with TR/TE 800/20, matrix size 256×192.
3. DWI: Field of view 26cm, Slice thickness 5mm with interslice gap of 1.5mm, number of excitations (NEX) = 3, matrix size 128×128, TR/TE 1000/81, B value 1000.
4. Gd-enhanced MR imaging using High resolution axial, sagittal, coronal T1 FSE and fat-suppressed axial T1 FSE. Gadolinium contrast (Omniscan, GE health care, 0.1mmol/kg body weight) used.

Image Analysis: On the basis of signal characteristics, enhancement patterns and morphology, the tumors are characterised. The size, number and location of the lesion in the posterior fossa were recorded. Co-existing lesions in other parts of brain were also noted. Perilesional oedema, mass effect on 4th ventricle and degree of hydrocephalus were assessed. Involvement or encasement of vessels, nerves and dissemination of lesion into other parts of brain were also assessed. Assessment of IAC and bone done in extra-axial tumors.

Histopathology: All patients were subjected to surgery and detailed operative findings with their histopathology report was taken. The MR morphology was correlated with histopathological features.

RESULTS: Magnetic resonance imaging was performed in 52 patients with posterior fossa tumors in a 2-year period from December 2012 to September 2014. Most of the cases were in the first decade.

Age (In years)	Males	Females	Total
0-10	8	6	14
11-20	3	3	6
21-30	5	3	8
31-40	2	5	7
41-50	7	2	9
51-60	4	4	8
>60	0	0	0
TOTAL	29	23	52

Table 1: Age and sex distribution of posterior fossa tumors

The patients had age group ranging from 1 year to 60 years with a mean age of 29 years, 29 were males, 23 were females.

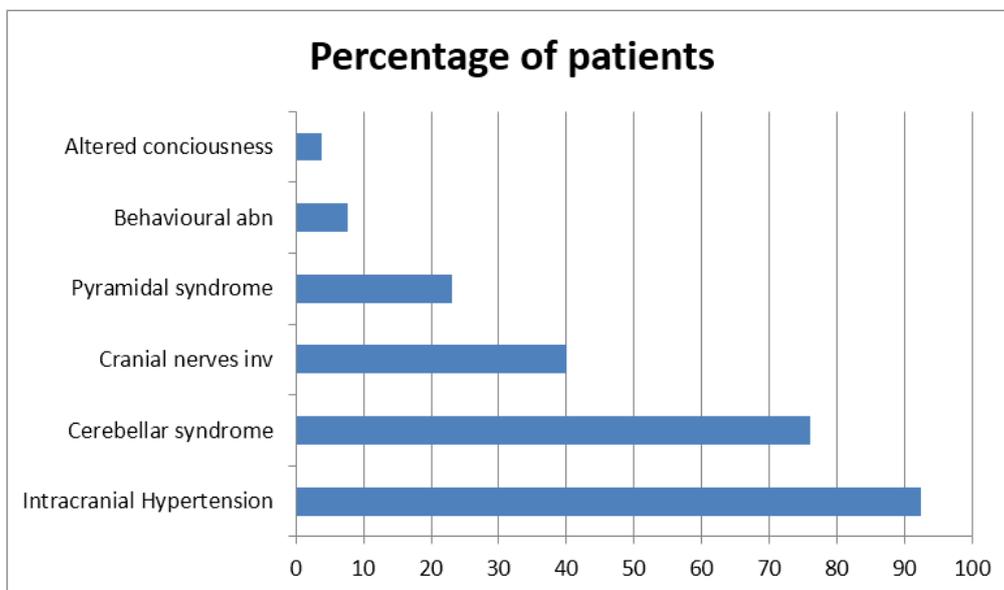


Fig. 1: Clinical presentation of posterior fossa tumors

The most common clinical presentation is intracranial hypertension (92.3%).

Tumor	Males	Females	Total
Vestibular schwannoma	5	5	10
Medulloblastoma	6	3	9
Meningioma	2	5	7
Metastasis	4	2	6
Pilocytic astrocytoma	2	3	5
Brain stem glioma	2	2	4
Hemangioblastoma	3	0	3
Epidermoid tumor	2	0	2
Ependymoma	1	1	2
Endolymphatic sac tumor	1	0	1
Glioblastoma	0	1	1
Paraganglioma	1	0	1
AT-RT (Atypical teratoid and rhabdoid tumor)	1	0	1

Table 2: Characterization of lesion in Genders

Of 52 cases most common tumor encountered in our study was vestibular schwannoma.

Characterisation of Lesion in <15 years group	No. of Patients
Medulloblastoma	4
Pilocytic astrocytoma	5
Brainstem glioma	4
Ependymoma	2
AT-RT	1
Bilateral vestibular schwannoma	1
Characterisation of lesion in >15 years group	
Vestibular schwannoma	9
Meningioma	7
Metastasis	6
Medulloblastoma	5
Hemangioblastoma	3
Epidermoid	2
Endolymphatic sac tumor	1
Paraganglioma	1
Glioblastoma	1

Table 3: Characterisation of lesion in age groups

Of 52 patients pediatric age group (<15 years) were 17 cases, adolescent and adult age group were 35 patients (>15 years). In <15 years age group intra-axial tumors (15) were more common than extra-axial tumors (2). Most common tumor encountered was pilocytic astrocytoma (5).

In >15 years age group extra-axial tumors (20) were more common than intra-axial tumors (15). Most common tumor encountered was vestibular schwannoma (9) followed by meningioma (7).

DWI Characteristics	Tumors
Restricted	Medulloblastoma, Epidermoid tumor, AT-RT
Not Restricted and Hyperintense to Cortex	Meningioma
Not Restricted and Isointense/Hypointense to Cortex	Rest of the tumors

Table 4: DWI characteristics of different tumors

Tumors with restricted diffusion are Medulloblastoma, Epidermoid tumor, AT-RT. Rest of the tumors were not restricted on diffusion. All acoustic schwannomas were isointense to cortex on DWI and all meningiomas were hyperintense to cortex.

Vestibular schwannomas were seen 10 cases. Two cases were associated with NF-2 syndrome, with B/L Vestibular schwannomas and other associated findings and younger age of presentation. Six cases seen in left CP angle, 2 cases in right CP angle. All cases having large component in CP angle cistern and small intra-canalicular component with widened IAC. One case seen with large cystic component, 7 cases with microhemorrhages. All cases were hypo/iso to hypointense on T1WI, hyper/iso to hyperintense on T2WI, Isointense on FLAIR. All cases showed intense contrast enhancement, 3 cases homogeneously and 7 cases heterogeneously. All cases not restricted on DWI and are isointense to cortex.

Meningiomas were seen in 7 cases; 4 cases seen in CP angle, 3 cases were tentorial based tumors; 2 cases showed calcifications. 6 cases were isointense on T1WI, hyper/Iso to Hyper on T2WI, Iso to Hyper on FLAIR, one case Hypo/Heterogeneous. Dural tail seen in 6 cases; 6 cases showed intense homogeneous contrast enhancement and 1 case showed mild heterogeneous contrast enhancement. No bony sclerosis or lysis seen. All cases not restricted on DWI and were hyperintense to cortex.

Metastasis were seen in 6 cases. The primary was found to be lung carcinoma in 3 cases, breast carcinoma 1 case, ovarian carcinoma 1 case, unknown primary 1 case. Five cases were hypointense on T1WI, hyperintense on T2WI and FLAIR. One case was heterogeneous in SI. All cases showed heterogeneous enhancement and not restricted on DWI.

Medulloblastomas were seen in 9 cases seen <15 years age group, all were central (vermis and 4th ventricle) in location. Five cases seen in >15 years age group, lateral (cerebellar hemisphere) location in 3 cases more common than central location (vermis and 4th ventricle) in 2 cases. One case showed CSF dissemination. One case showed hemorrhage. Cystic change seen in 3 cases. All were restricted on DWI.

Pilocytic astrocytomas were seen in 5 cases. Three cases seen vermis and medial part of cerebellar hemisphere, 2 cases seen in lateral part of cerebellar hemisphere. Three cases showed large cyst with small mural nodule, 1 case was solid with few cystic areas, 1 case was solid.

Brain stem gliomas were seen in 4 cases. All cases showed enlarged pons and basilar artery encasement. Three cases showed enhancing component, 1 case was non-enhancing. All were mixed hypointense on T1W, hyperintense on T2W, heterogeneous on FLAIR and not restricted DWI.

Ependymomas were seen in 2 cases. Both cases showed extension laterally into CP angles. One case showed midline extension into cisterna magna. Both cases showed moderate and heterogeneous contrast enhancement.

Hemangioblastomas were seen in 3 cases, all 2 cases seen in cerebellar hemisphere with large cyst and intensely enhancing mural nodule. One case seen in vermis, which is predominantly solid with few cystic areas. Multiple flow voids seen in all cases. All cases were not restricted on DWI.

Epidermoid tumors were seen in 2 cases, both were male with mean age was 40 years. Both cases showed CSF SI on T1W, T2W sequences, not fully suppressed on FLAIR and with extension along cisternal spaces, encasement/engulfment of vessels and nerves, no contrast enhancement and restricted on DWI. In one case of endolymphatic sac tumor occurred in 23-year-old male. It showed heterogeneous SI on T1WI, T2WI, FLAIR, no restriction on DWI, hemorrhage and calcification GRE. Also showed lytic destruction of petrous bone. One case of paraganglioma seen in 41-year-old male. Tumor was hypointense on T1WI, hyperintense on T2WI and FLAIR, not restricted on DWI. Multiple flow voids seen in the lesion. One case of Glioblastoma Multiforme seen in 60-year-old female. Tumor was hypointense on T1WI, hyperintense on T2WI, heterogeneous on FLAIR and not restricted on DWI. One case of AT-RT seen in 5-year-old male child. It showed 2 lesions, one in posterior fossa and one in cerebrum in periventricular region with similar SI that is hypointense on T1WI, iso to hyperintense on T2WI and FLAIR. Lesions restricted on DWI.

DISCUSSION: The age group of cases ranged from 1 to 60 years. Mean age in our study was 29 years. Out of 52 cases studied, males were 29 and females were 23 with slight male preponderance. Most commonly affected age group in our study was 1 to 10 years. Kabashi S et al.⁽⁷⁾ in their study showed no significant difference between genders. The average age of patient with posterior fossa tumor was 33 years and peak incidence in 0 to 9 years age group. It is comparable to our study. Least incidence observed was between 30 to 39 years. In our study, least incidence seen in 11 to 20 years age group.

In our study, less than 15 years age group were 17 cases. In that 15 were intra-axial, 2 were extra-axial. Most common tumor encountered was pilocytic astrocytoma (29.4%) followed by medulloblastoma (23%). These results were comparable to study conducted by Andrea Poretti et al.⁽⁸⁾ Mohamed T Abd Alhak et al.⁽⁹⁾ Kabashi S et al.⁽⁷⁾

In our study more than 15 years group were 35 cases. In that 20 cases were extra-axial and 15 cases were intra-axial. Extra-axial tumors more common than intra-axial tumors in adults in our study. Most common extra-axial

tumor encountered was vestibular schwannoma, followed by meningioma and epidermoid tumor. Most common intra-axial tumor encountered in adults in our study was metastasis followed by hemangioblastoma and glioblastoma. This was similar to study done by Bilaniuk LT et al.⁽¹⁰⁾ Lo WWM et al.⁽¹¹⁾ Atlas SW et al.⁽¹²⁾ A second peak of medulloblastoma observed in our study is between 15 to 27 years, this go with Arnolfo de Carvalho Neto et al.⁽¹³⁾

We encountered 19 cases in CP angle. In that vestibular schwannoma was the most commonly encountered tumor (52.6%) followed by meningiomas (21%). These results were similar to studies done by Moffat DA et al.⁽¹⁴⁾ Lalwani AK et al.⁽¹⁵⁾ Grey PL.⁽¹⁶⁾

In our study vestibular schwannomas were seen in 10 cases with male-to-female ratio 1:1 and mean age was 39 years. Two cases were associated with NF-2 syndrome with B/L vestibular schwannomas and multiple meningiomas in orbit, brain, spine and multiple intra-spinal schwannomas and younger age of presentation. These findings go with Glasscock ME et al.⁽¹⁷⁾ Six cases were seen in left CP angle, two cases in right CP angle. All cases having large component in CP angle cistern and small intra canalicular component with widened IAC. All cases were hypo/iso to hypointense on T1WI, hyper/iso to hyperintense on T2WI, Isointense on FLAIR. All cases showed intense contrast enhancement, 3 cases homogeneously (30%) and 7 cases heterogeneously (70%). These radiological findings were well correlated with histopathological diagnosis. The results in our study were comparable to study done by Haque S et al.⁽¹⁸⁾ In their study the age range from 21-60 years and the mean age was 42.85 years. Highest incidence of Cerebellopontine Angle (CPA) mass (i.e. 42.86%) were found in 41-50 age group of patients. Male and Female ratio was 1.083:1. Acoustic Schwannoma is T1 hypointense in 100%, T2 hyperintense in 84.61% and heterogeneously hyperintense in 92.30% in FLAIR image. After giving contrast agents, homogeneous enhancement was seen in 57.69% and heterogeneous in 42.31% cases of Acoustic Schwannomas. Overall in 61.54% of Acoustic Schwannomas, strong contrast enhancement was observed. Dural tail was observed in 26.92% cases. Perilesional edema was observed in 38.46% cases. Mass effect was observed in 76.92%. After complete MRI evaluation, 61.9% had Acoustic Schwannomas. Histopathologically proved cases showed that out of all patients Acoustic Schwannomas were 59.52%.

Meningiomas were seen in 7 cases with male-to-female ratio 1:2.5 (female preponderance) and mean age was 44 years, these findings were similar to Glasscock ME et al.⁽¹⁷⁾ 4 cases were seen in CP angle, 3 cases were tentorial based tumors. Two cases showed calcifications. Six cases were isointense on T1WI, hyper/Iso to hyper on T2WI, Iso to hyper on FLAIR, one case was hypo/heterogeneous. Dural tail seen in 6 cases. Six cases showed intense homogeneous contrast enhancement and 1 case showed mild heterogeneous contrast enhancement. The signal intensity characteristics were comparable to Moffat DA et al.⁽¹⁴⁾ Lalwani AK et al.⁽¹⁵⁾ Glasscock ME et al.⁽¹⁷⁾ and Voss NF et al.⁽¹⁹⁾

In our study, on comparison of vestibular schwannomas and meningiomas there is no involvement of IAC in any of the meningiomas. Signal intensity on T2W is higher in vestibular schwannomas than in meningiomas. Signal heterogeneity is common in vestibular schwannomas than in meningiomas. On DWI vestibular schwannomas were iso to hypointense to cortex whereas meningiomas were hyperintense to cortex. These findings were comparable to Watabe T et al.⁽²⁰⁾ Worthington BS et al.⁽²¹⁾ Moffat DA et al.⁽¹⁴⁾ and Lalwani AK.⁽¹⁵⁾

Metastasis were seen in 6 cases with male-to-female ratio 2:1 and mean age was 49 years. The opinion of many authors is that metastatic lesions are the commonest lesions in elderly involving the posterior fossa and lung and breast are the common primary sites, are concurrent with our observation.

Five cases were hypointense on T1WI, hyperintense on T2WI and FLAIR. One case was heterogeneous in SI. All cases showed heterogeneous enhancement and not restricted on DWI. These signal intensity characteristics were correlated with study conducted by Milos A et al.⁽²²⁾ who conducted a study in 99 patients with known primary cancer. They showed that in great majority of the patients, MRI pattern of intra-axial posterior fossa metastatic tumors was nonspecific. In 9 patients (9.09%) specific pattern was connectable with the primary malignancy site of origin. They concluded that regardless its primary site of origin, great majority of intra-axial metastatic tumors in posterior fossa demonstrate nonspecific MRI pattern, while only small number of metastases due to their unique features demonstrate specific pattern which may suggest the primary malignancy site of origin.

Hemangioblastomas were seen in 3 cases, all were males with mean age was 39 years. Two cases seen in cerebellar hemisphere with large cyst and with isointense mural nodule, which is intensely enhancing. All cases were not restricted on DWI. All features were histologically correlated. These findings were similar to Sundaram C et al.⁽²³⁾ There was male preponderance with a male-to-female ratio of 3.17:1. The age at presentation ranged from 8 to 65 years and 17 cases were in the 3rd through the 5th decade of life.

J Jaggon et al.⁽²⁴⁾ studied total of five tumors from five patients with an age range of 19 to 49 years and an average age of 32.8 years. The male-to-female ratio was 1:4. All the HMBs were within the posterior cranial fossa with 3 occurring in the right cerebellar hemisphere and 2 in the cerebellar vermis; no patient had more than one lesion.

Medulloblastomas were seen 9 cases with male to female ratio 2:1 (male preponderance); 4 cases (23%) seen in <15 years age group, all were central (vermis and 4th ventricle) in location; 1 case (11%) showed CSF dissemination. Therefore, when medulloblastoma is suspected it is crucial to extend preoperative MRI to spine as detection of spinal seeding may modify therapeutic strategies and this finding was also noted with Mohamed T Abd Alhak et al.⁽⁹⁾

Five cases were seen between 15 to 27 years, lateral (cerebellar hemisphere) location in 3 cases and is more common than central location (vermis and 4th ventricle) which is seen in 2 cases. In our study we noted that adult medulloblastoma located laterally in cerebellum than in midline. This is supported by Arnolfo de Carvalho Neto et al.⁽¹³⁾ one case (11%) showed hemorrhage. It is rarely seen and this feature is variably supported by Andrea Poretti et al.⁽⁸⁾ Cystic change seen in 3 cases. Signal intensities on T1WI were hypointense in 8 cases, heterogeneous 1 case. Iso to hyperintense on T2WI in 5 cases, heterogeneous in 4 cases. Signal heterogeneity was attributed to cystic degeneration and hemorrhage. All were restricted on DWI. Signal intensity characteristics in our study were comparable to study done by Andrea Poretti et al.⁽⁸⁾ and Mohamed T Abd Alhak et al.⁽⁹⁾ These signal intensity characteristics were well correlated with histopathology.

Pilocytic astrocytomas were seen in 5 cases (29.4% of pediatric age group) with male-to-female ratio 2:3 and mean age was 10 years. Three cases (60%) were seen in vermis and medial part of cerebellar hemisphere, 2 cases (40%) seen in lateral part of cerebellar hemisphere; 3 cases (60%) showed large cyst with small mural nodule, mural nodule was isointense on T1WI, T2WI and FLAIR; 1 case (40%) was solid with few cystic areas which was heterogeneous on all sequences, 1 case (40%) was solid which was hypointense on T1WI, hyperintense on T2WI and isointense on FLAIR. In 3 cases with cystic lesion with mural nodule, 2 cases (66%) showed only mural nodule enhancement; one case (33%) showed enhancing wall and mural nodule. The other 2 solid cases showed heterogeneous enhancement. All cases were not restricted on DWI. These findings were comparable to study done by Andrea Poretti et al.⁽⁸⁾ and Mohamed T Abd Alhak et al.⁽⁹⁾ All cases were correlated with pathological findings.

Brainstem gliomas were seen in 4 cases (23% of paediatric age group) with male-to-female ratio 1:1 and mean age was 7 years. All cases showed enlarged pons and basilar artery encasement. Three cases showed enhancing component, 1 case was non-enhancing. All were mixed hypointense on T1W, hyperintense on T2W, heterogeneous on FLAIR and not restricted DWI. These findings go with Andrea Poretti et al.⁽⁸⁾ and Mohamed T Abd Alhak et al.⁽⁹⁾ All MRI findings were conceivable with histopathological findings.

Ependymomas were seen 2 cases (11.7% of pediatric age group) with male-to-female ratio 1:1 and mean age was 2 years. Both cases showed extension laterally into CP angles. These findings were variably correlated with Andrea Poretti et al.⁽⁸⁾ and Mohamed T Abd Alhak et al.⁽⁹⁾ MRI findings of both lesions were in concordance with histopathological findings.

We encountered one rare case of Glioblastoma Multiforme in 60-year-old female. Tumor was hypointense on T1WI, hyperintense on T2WI, heterogeneous on FLAIR and not restricted on DWI. Histopathological examination confirmed it as glioblastoma multiforme. These findings correlated with case reports done by Hyuk Hur et al.⁽²⁵⁾

Thus MRI was able to predict histological diagnosis in 50 of the 52 posterior fossa brain tumors, accounting for 96% of the tumors.

CONCLUSIONS: It could suggest the nature of the lesion in all cases of vestibular schwannomas, meningiomas, metastasis, hemangioblastomas, medulloblastomas, pilocytic astrocytomas, brainstem gliomas, ependymomas, endolymphatic sac tumor, paraganglioma, epidermoid tumors. But it was not possible to achieve a specific diagnosis in one case of glioblastoma multiforme, one case of AT-RT (atypical teratoid and rhabdoid tumor). This accounted for a detection rate of 96%. Magnetic resonance imaging was found to be a highly sensitive imaging procedure and method of choice for posterior fossa brain tumors. Nevertheless, accurate diagnosis could only be suggested rather than made definitely.

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