The Role of C . T . in diagnosis of Posterior cranial fossaa Tdumours

Essay

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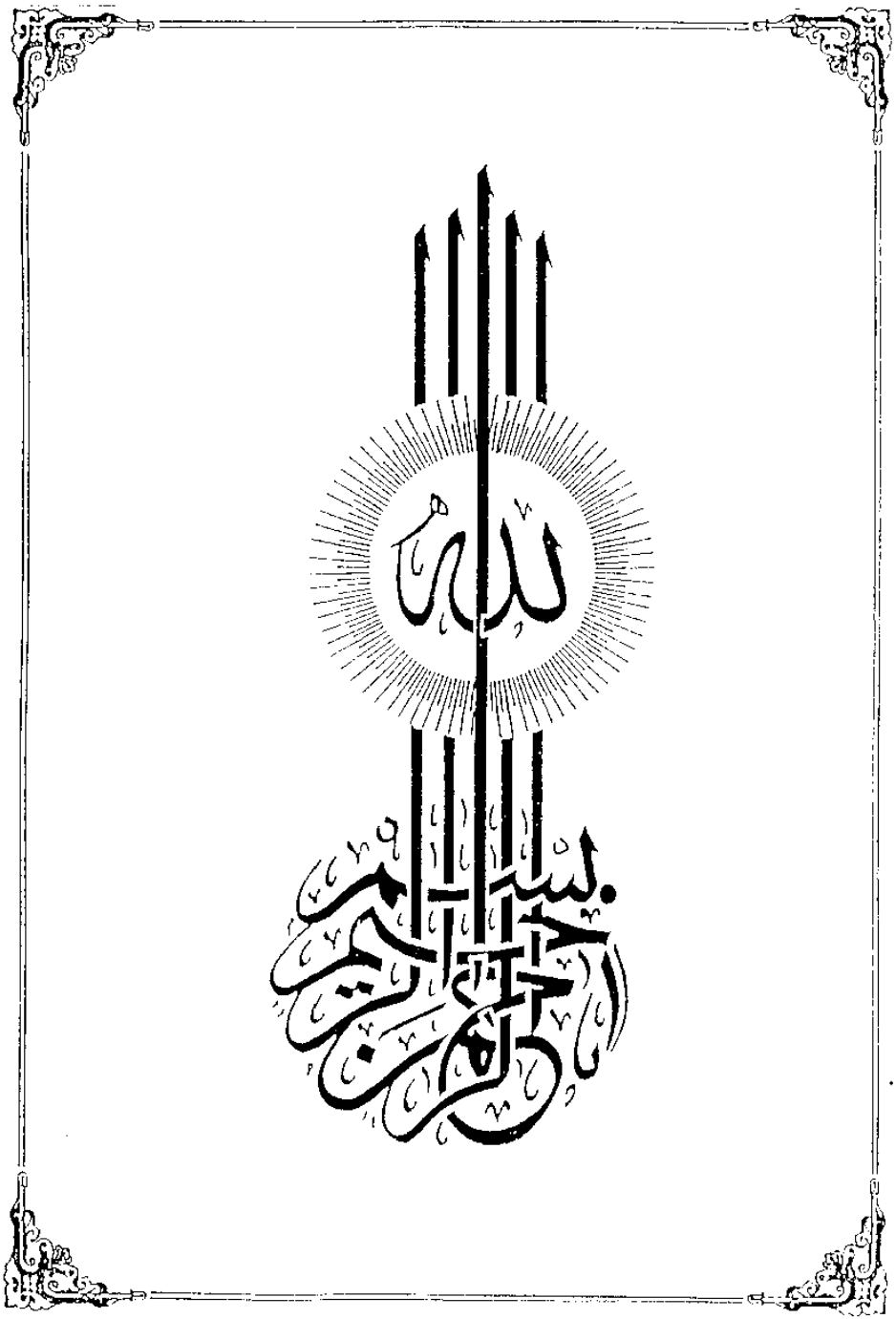

The role of C T in diagnosis of posterior cranial fossa tumours .

1) introduction and aim of the work

The posterior cranial fossa is considered as one of the most interesting areas in the brain , being the favourable seat for many pathological lesions and tumours in different age group . Itis unique in it's contents and configuration and this lead to variability of the tumours arising in this area . In the past the diagnosis of posterior cranial fossa tumours was relied upon invasive and inaccurate radiological procedures . Recently the invention of C T plays amjor role in detection and distinguish the different types of posterior fossa tumours and has the benefits of being sensitive , safe ,and non invasive radiological modality . The aim of this work is to study the different types and locations of the posterior cranial fossa tumours and their appearance by C .T .

2) Review of literatures

A) anatomy of the posterior cranial fossa as appear by C T.

B) Pathology of posterior cranial fossa tumours

C) Clinical picture of patients with posterior cranial fossa tumours

3) Methodes of examination by C. T

4) Characteristics of posterior cranial fossa tumours by C.T

5)Illustrated cases

6)Summary and conclusion

8)References

9)Arabic summary

ANATOMY

ANATOMY OF THE POSTERIOR CRNIAL FOSSA

The posterior cranial is defined by osseous and dural boundries. it is bordered anteriorly in the mid line by the dorsum sellae and clavus. the antro lateral borders are the petrous and mastoid portions of the temporal bones.the lateral boundaries are formed by the occipital bone. the roof of the fossa is composed of the tentorial hiatus,while the bone form the floor.

FORAMEN MAGNUM

it is a larg orifice in the occipital bone,oval in shape, while the long axis in sagittal plane.

(Montemurro and Brani,1981)

The foramen omagnum serves to transmit the medulla oblongata with the accompaying meninges, the duramater, the accessory nerves , the vertebral arteries, the spinal arteries, occasionally aportion of the posterior inferior cerebellar arteries, and the ligaments connecting the occipital bone with the axis.

(Coin andMalkasian,1971)

THE JUGULAR FORAMEN

The jaguarl foramen is actually ashort canal between the posterior fossa and the upper cervical region on each side ,

passing anteriorly, laterally and inferiorly form the posterior fossa.

(carpenter,1979)

Cerebello-Ponine angle

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*The cerebello pontine angle indicate aspace,that is bounded by the anterior surface of the petrous pyramid, lateralborder of the clavius , jugular tubercle and jugular tubercle foramen antero.inferiorly,the tentorium sueriorly, the brachium pontis and the cerebellar hemisphere postersuperiorly,and the pons medially.

*the cerebello pontine angle is occupied by the cerebello pontine angle(C P A)cistern,an extension of the basal cistern medially,and the cerebello medullary cistern inferioly

(Ozemann, 1979)

The internal auditory canal

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The internal audtory canal is perpendicular to the sagital plane. its opening ,the porous acousticus,is on the postero inferior surface of the petrous pyramid. the lateral end of the internal auditory canal is called the fundus. within the internal auditory,runs the fascial, the cochlear division of the

eighth nerve, the internal auditory artery,and several small veins.4

(valvassoi, 1964)

.The midbrian or the mesencephalon.

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The midbrain is ashort segment of the brain stem .

the midbrian consist of asmaller portion called the tectum, and alarger anterior portion formed by the cerebral peduncles .

The floor of the interpeduncular fossa is the posterior perfrated substance .

(Chusid , 1973)

The hind brian .

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The hindbrain consists of two parts,the anterior part is the medulla oblongata, inferiorly , and the pons, superiorly . The posterior part is cerebellum . Between the anterior and posterior parts of the hind brain , there is a cavity - the fourth ventricle- .

The medulla oblongata .

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The medulla oblongata is continious inferiorly with the

spinal cord and superiorly with the pons. There are two mid line grooves ,aventeral and adorsal one .

These two midline grooves, bissect the medulla . Each half further more shows two longtudinal grooves, the venteral lateral sulcus and the dorsal lateral sulcus. The upper half of the dorsal surface of the medulla shows diverging prominence forming the lateral boundaries of the floor of the fourth ventricle . These prominence contain the inferior cerebellar peduncles , which connect the spinal cord and medulla with the cerebellum .

(Mokhtar , 1983)

The pons .

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The pons connects the medulla below with the mid brian above . There is ashallow midline depression on the venteral surface of the pons .The basilar sulcus . in which lies the basilar artery. The dorsal surface of the tegmentum . (dorsal part pons) forms the upper half of the floor of the fourth ventricle, so the floor of the fourth ventricle is formed , in part by the dorsal aspect of the medulla and in part by the dorsal aspect of the pons . These two components form the rhomboid fossa

(Mokhtar , 1983)

The cerebellum .

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The cerebellum is attached to the brain stem by three cerebellar peduncles . The cerebellum consists of anarrow mid - line portion - the vermis - and two hemisphere , which extend laterally and inferiorly . When viewed from the superior aspect , the cerebellum has amid line shallow concavity anteriorly (the anterior cerebellar fissure) , and anarrow deep groove posteriorly (the posterior cerebellar fissure) . The cerebellar tonsil are the most anterior inferior structures of the cerebellar hemisphere .

PATHOLOGY

Intra - Axial tumours

Medulloblastoma :

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- Cerebellar medulloblastomas are tumours,. composed of primitive or poorly differentiated cells that originate in relation to the roof of the fourth ventricle .

(Rubinstien , 1980)

They primarly occur in childhood, and more than 50/ of the lesions are found in the first decade of life .

(Oat and Davis , 1986)

- Medulloblastoma in childern are virtually all mid line(fourth ventricle and vermis) lesions, but in the second and third decade , many are located more laterally and posteriorly in cereballar hemispheres .

(Zimmerman , 1978)

These tumours are densely cellular and show avery notable propensity to extend into the fourth ventricle and its lateral recesses , to expand from mid line into the adjacent cerebellar hemispheres , and infilterate the overlying leptomeninges .

(Hilal , 1979)

-Retrograde metastases are occasionlly found in the floor of the third ventricle, and the frontal horns and bodies of the lateral ventricle, probably related to partial or complete obstruction of the fourth ventricle by the primary tumour. Central necrosis may be seen in the larger tumours, but most medulloblastoma are solid well circumscibed masses

(Russel and Rubinstein , 1977)

Cerebellar astrocytoma ;

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-This is the most common posterior fossa neurological tumour, and occurs most ferqently in childern .

(Weisberg, 1977)

These tumours usually occur during the first two decades of life, and are typically well circumscribed , rarely undergo anaplasia into higher grades of malignancy .

(Russell and Rubinstien)

- C ystic astrocytomas may occur any where within the cerebellum . A slight majority arises in cerebellar hemispher , but these ferqently involve the vermis as they expand .

(Hilal , 1979)

-The larger cystic masses tend to extend into the fourth ventricle, or the cerebellar tonsils and peduncles .

(Russell and Rubinstein , 1977)

In cystic astrocytomas , with prominent mural nodules the cyst is actually extratumoural , with no evidence of malignant tissue in the cyst ,. except at site of mural nodule

(Zimmerman , 1978)

Aminority of cerebellar astrocytomas are predominantly or completely solid .

(Russel and Rubinstein 1977)

-The solid lesions tend to spread more diffusely and infilterate the brain stem

(Hilal , 1979)

Ependymoma :.

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E pendymoma comprises 5 - 6 % of intracranial neurological tumours , and occur most commonly in the posterior fossa .

(Rubinstien , 1972)

-The ependymoma lining the floor and the roof of the fourth ventricle is the most common site of origin of these bening neoplasms , although sizeable minority originate in the walls of lateral ventricles .

(Russell, 1977)

-The two age peaks for infratentorial ependymomas are approximately 5 years and 34 years .

(Swartz , 1982)

-Grossly , they are solid , well circumscribed masses withen the cavity of the fourth ventricle, which extend into the adjacent cerebellar hemispheres and vermis and may protrude into the lateral recesses or extend downward in a tongue - like fashion through Magendi's foramen

(Russell, 1977)

- Ependymoma typically has the highest incidence calcification among posterior fossa tumours (56 %)

(Grumme etal , 1978)

Haemangioblastomas

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- Haemangioblastoma comprises approximately 7% of