A study of 54 cases of cerebellar Astrocytoma (In paediatric age group)

Ali K. AL-Shalchy* MBChB FlCMS FlCNS MRCSI

Summary:

Background: cerebellar astrocytroma is the commonest paediatric posterior fossa tumor.

Patients and method: 54 patients taken from the neuro-surgical unit in the specialized surgical hospital from Aug 1995 till March 2003, all patients studied thoroughly age, gender, Presentation, Radiological diagnoses, surgery, additive therapy & final outcome including 5 years survival & conclusion is reached.

Results and discussion: the results show that more than half of the patients were at age 5-7 years with very slight male predominance, most cases diagnosed by CT, some with MRI or MRI alone.Surgery was done for all cases & 16 patients' preceeded by VP shunt. The final out come is compared with other similar studies.

Conclusion: cerebellar astrocytoma acommon post fossa pediatric tumor if diagnosed early & proper surgery is done early, good prognosis can be gained.

Keywords: cerebellar astrocytoma, hydrocephalus VP shunt.

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Introduction

cerebellar Astrocytoma: constitute about 10-20% of all childhood brain tumors they are rare in the 1st year of life & exhibit peak incidence in the half of the 1st decade of life(1). Both sexes are affected equally. (2) Clinical features: the usual presentation is abnormal gait, diplopia, head tilt, & altered level of consciosness, pain in the neck, opisthotonic posture while bradycardia, bradypnea, & hypertension indicate impending deterioration and require immediate attension to relieve pressure on the brain stem. Depressed consciousness indicate poor prognosis(3,4) papilledema occur in about 4/5 of the patients & abducent palsy in around 15% truncal ataxixa & nystagmus are common & are directly related cerebellar symptoms(5). The diagnosis is usually by CT &/or MRI, & rarely angiography is needed. In CT the higher grade lesion tend to be solid or to have mixed cystic & solid pattern, midline tumors are predominantly solid and lateral lesions predominately cystic. The brain stem is generally spared although it may be displaced by the mass, hydrocephalus may be associated about the causes (6, 7) Management: 1st study by corticosteriods & then may need to do VP shunt then the main surgery which craniectomy of the posterior fossa, & opening the dura & then we try to remove the whole Tumor then cytotoxic drugs or Dxt can be added depending on the oncologist preference. (8, 9) Outcome: children with cystic astrocytomas of the CNS have a generally good prognosis. (10)

***** *Dept. Of Surgery, College of Medicine, University of Baghdad***.**

Patients and methods:

54 paediatric patients selected from the specialized surgical hospital (known at that time AL-Saheed Adnan hospital). From August 1995 till March 2003, gender, clinical presentation. Radiological diagnosis, Surgical management with or without DXT or cytotoxic or both, & follow up 5 years & outcome. Compared with other studies & conclussion is made.

Table 1: age

age	no	%
0-1	1	1.8%
1-2	3	5.5%
2-3	3	5.5%
4-5	8	14.8%
5-6	16	29.6%
6-7	12	22.2%
8-9	3	5.5%
9-10	3	5.5%
10-11	2	3.7%
11-12	1	1.8%
12-13	1	1.8%
13-14	1	1.8%
14-15	0	0
15-16	0	0

Table (2): gender.

Gender	No.	%
♂	29	53.7%
♀	25	46.3%

Table (3): clinical features (symptoms & signs)

clinical symptom	No.	%
Head ache	47	87%
Papilledema	64	85%
Nystagmus	42	77.7%
Ataxia	38	70.3%
Nausia & vomiting	36	66.6%
Diplopia	20	37%
general ill health	6	11.1%
Fever	2	3.7%
Detoriaration of consciousness	3	5.5%
bradycardia	3	1.8%
Bradypnea	1	1.8%

Table (4): Radiological investigation(s).

Radiological investigations (Diagnosis)	No.	%
CT	30	55.5%
MRI	14	25.9%
CT+MRI	6	11.1%
CT+MRI+MRA	4	7.4%
Angiography + others	1	1.8%

N.B: Angiography was done in one case with the CT scan.

Table (5): The presence of hydrocephalus by CT or MR.

	No.	%
Hydrocephalus	21	38.8%
Normal	33	61.1%

Table (6): The radiological finding in the post fossa.

The finding	No.	%
cystic lesion	20	37%
Solid lesion	11	20.3%
cystic & solid	23	42.5%

Table (7): envolvement of the brain stem.

State	No.	%
envolvement of brain stem	6	11.1%
pressure on the brain stem	25	46.2%
Brain stem not affected	23	42.5%

Table (8): The management of the hydrocephalus (21 cases).

The way of management	No.	%
VP shunt	16	76.2%
safety burr hole	5	23.8%

Table (9): The surgery (craniectomy & excision of the Tumor).

Surgery		
Total removal	43	79.6%
subtotal removal	11	20.3%

Table (10): The outcome of surgery (Immmediate).

	No.	%
good	33	61.1%
fair	15	27.7%
bad	3	5.5%
dead	3	5.5%

Table (11): Adjuvant therapy.

	No.	%
DXT	11	20.3%
cytotoxic	9	16.6%
DXT + cytotoxic	13	24%
None	21	38.8%

Table (12): The final out come.

Survival	No.	%
0-1 m.	49	90.7%
1m – 1 year	48	88.8%
1-2 years	46	85%
2-3 years	44	81.4%
3-4 years	42	77.7%
4-5 years	41	75.9%

Table (13): patients needed more than 1 surgery for

No. of surgery	No.	%
1 surgery	49	90.7%
2 surgery	5	9.3%

Results and discussion:

54 patients studied from August 1995 till March 2003 & all followed at least for 5 years. The age of the patients more than half of the patients were in the age between 5-7 years which goes with most studies in this field(1, 2,3) , the sex distribution show male 53% & ♀ 47%, & most studies show equal sex distribution (1, 2,3). The clinical features show that headache was present about 87% of the patients putting in mind that 7% of the patients were below 3 years of age where such a symptom can be very difficult to ellicit, papillaedema present, in 85%, Nystamus 77%, ataxia 70.3% diplopio 37%, 5.5% presuted by deturiaration of conscious, & 1.8% with brady candia & 1.8% bradypnea, these last 3 symptoms & signs are the patients who presented late until such symptoms occur, may be due to parent neglect or poor radiological facilities, any how our results are close to other studies.(4, 5). More than half of case 55.5% were diagnosed by CT alone, and quarter of these 25.9% by MRI, & 11.11% had the opportunity of both CT & MRI, & 7.4 had MRA as well by surgeon request & only one patient needed Angiography with the CT, which is an invasive pnocedue. 38% had hydrocephalus with the tumor due to the obstruction by the tumor or oedema of the tumor. The tumor was mainly cystic 37% & mainly solid 20.3%, & mixed 42% which goes with most findings of simillar studies(6, 7) The brain stem envoled in 11.1% by tumor extension, & pusted by the tumor 46% & free in 42&. The management 76% of the patients who had hydrocephalus (the 21 patients with hydrocephalus)

was 1st shunted, this is mainly related to surgeon experience when 24% of the patients were not shunted only safety burr hole during surgery. The main surgery is craniectomy & excision of the tumor 80% total removal was possible 20% total removal was not possible either due to direct involvement of the brain stem, or due to anesthesia request to stop the surgery due to repeated bradycardia during surgery.The mortality of surgery was only around 5%, & good result, 61%, were fair with minimal disability 27% mainly walking difficulties, 5.5% were crepeled. These result are good compared with Winston & gilles which show 5% mortality & 75% good prognosis(8) or with grantficons DK with his 200 cases study(9) & GdA Mckissock the most famous study of post fossa (98 cases) & show very close results to our surgical outcome(10). 38.8% of patients did not need any adjvant therapy as tumor was resected completely & found to be low grade & followed up only, 16.6 needed cytotoxic, 24% cytotoxic & DXT, 20.3% only DXT there were marnly the choice of the oncologist and not neuro-surgeon. 9.3% of the patients needed a 2nd surgery which is close to Winston & Gillcus 10% & grant fc jone DK. around 8%, (9) & meckissock 12%(10) The final outcome we lost around 10% the 1st month i.e. 5 patients & we lost only another 8 patients 5 years time i.e. the most imported is the early post operative period. The final outcome goes with most studies winston & gilles(8) & grant fc jones PK(9) & Gol A M ckissock(10).

Conclusion:

cerebellar Astrocytomes a fairly common tumor, carries good prognosis if managed early & properly by surgery with or with out DXT &/or cytotoxic drugs.

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