

Primary Adrenal Tumors –Our Experience:

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ABSTRACT:

INTRODUCTION : The incidence of adrenal tumours is much lower than that of other tumours in humans, We report a series of 28 cases of adrenal tumors treated in our hospital .

OBJECTIVE: To review and analyse clinical data on the diagnosis and management of patients with adrenal masses.

MATERIAL AND METHODS: It is a retrospective study of 28 case of adrenal tumours treated in our hospital between Aug 2015 to Aug 2018, have been analyzed. Various parameters such as gender, age, clinical presentation size of tumour , functional status , histopathology , type of management have been reviewed.

RESULTS: 18 out of 28 belonged to males and majority (78.5%) had presented with symptoms, incidentalomas were found in 21.4% patients. Nonfunctioning tumours were noted in 60.7% patients. pheochromocytoma was the commonest tumour noted in 64.28% followed by adrenal cortical adenoma in 14.28%, carcinoma in 10.71% and lipoma, myelolipoma and ganglioneuroma , 3.5% each . All the patients are doing well over a mean follow-up of 2.5% years.

CONCLUSION: In conclusion , we recommend that: (i) CT is the primary method used to define and localize adrenal masses; (ii) hormone levels should be measured in symptomatic or asymptomatic patients with adrenal masses ; (iii) functional adrenal tumours and solid incidentalomas of any size should be removed by surgery.

Date of Submission: 04-10-2018

Date of acceptance: 19-10-2018

I. Introduction:

Primary adrenal tumours encountered in clinical practice are functioning or non-functioning tumours . Asymptomatic arenal masses discovered incidentally (incidentalomas) are becoming increasingly frequent with availability of advanced imaging. Adrenal tumours are surgically removed due to the fear of malignant changes/hormonal disturbances created by them.

II. Materials And Methods:

28 case records were studied for clinical presentation and correlation with radiological [Ultrasonography(USG) CT , MRI] and pathological investigations, Functional status was evaluated by baseline hormonal assessment which included serum potassium, cortisol, aldosterone, urinary Vanillyl mandelic acid (VMA) and metanephrine levels.

III. Results:

Mean age of the patients were 48 years(range 17-60 years).Mean size of tumor was 8.0 cm (range 3.0-12.6 cm).Benign tumors were comparatively smaller (average 5.7 cm) than malignant tumors (average 9.6 cm). The clinical presentation was varied, abdominal pain being the most common presentation anorexia and weight loss were the second most common presentation . Ascites, virilisation, blurring of vision and palpitation , hypertension with hypertensive retinopathy were other presentations . Ascites was present in two patients both with malignant disease.

After controlling blood pressure, initially with prazosin (alpha blocker) and nifedipine (calcium channel blocker) and later metoprolol (beta blocker) the patient underwent adrenalectomy , there was no intraoperative rise of blood pressure. The mean size of carcinoma was greater than that of benign tumors (9.6 vs. 5.7 cm). 26 patients underwent adrenalectomy by transabdominal subcostal approach. Two patients with advanced malignancy did not undergo surgical intervention . All specimens were sent for histopathology . The details of tumor profile are included .

DETAILS OF THE TUMORS CHARACTERISTICS:

Lesion	Number	Gender M/F	F/NF	Size of tumour (range cms)	Incidental
Pheochromocytoma	18	13:5	8/10	(4-13)	1
Adrenal adenoma	4	1:3	1/3	(4-6)	2
Adrenal cortical carcinoma	3	1:2	1/2	8(2.83) (6-10)	1
Lipoma	1	1:0	0/1	14	1
Myelolipoma	1	0:1	1/0	9	-
Ganglioneuroma	1	1:0	0/1	10	1

IV. Discussion :

The differential diagnosis of an adrenal mass is extensive , non-secreting cortical adenomas account for majority of tumours (41%) , others' being metastases (19%) , adrenocortical carcinoma (10%) , myelolipoma (9%) , pheochromocytoma (8%) , benign lesions like adrenal cysts forming the remainder.

Size of the lesion also gives an indication of its etiology , the chances of malignancy being higher in larger tumours . In our experience also , the mean size of malignant tumours was 9.6 cm as compared to 5.7 cm in the benign group . A reasonable accepted cut-off value 4 cm beyond , which strong suspicion of malignancy should be entertained.

The bilaterality of tumours suggest several diagnosis , which includes metastatic disease , congenital adrenal hyperplasia , lymphoma , ACTH dependent cushing syndrome , pheochromocytoma , amyloidosis , infiltrative disease of the adrenal gland .

In CECT scan perinephric fat allows better visualization of the gland and 1 cm size lesion can be detected with 100% sensitivity . Benign tumours appear as smooth homogenous masses of low density with a low attenuation value (<10 hounsfield units [HU] on a CT scan is likely to be a benign adenoma. Malignant lesions appear to be larger with irregular margins and heterogeneous density.

Myelolipoma exhibit a non-functioning tumour composed of fat and bone marrow elements . Metastatic deposits from other primary are often bilateral with irregular margins and irregular enhancement. A threshold of 10 HU and 24 HU with a 14 min delay on a CECT scan are used as cut off values to distinguish between adenomas and metastasis.

Dynamic gadolinium enhanced studies give more reliance to MRI scans. Imaging performed 36-48 h after meta-iodobenzylguanidine (MIBG) injection (metaiodobenzylguanidine) is useful for detection of pheochromocytoma. PET imaging with 18-F flurodeoxyglucose is a useful modality benign tumours do not show uptake pattern while metastasis show high uptake with 100% sensitivity and specificity . Whole body PET scan can show extra – adrenal involvement.

Favia et al have suggested the following test to be conducted in all patients of incidentalomas: (1) baseline plasma cortisol levels; (2)plasma aldosterone and plasma rennin activity ; (3) serum DHEA-S concentration ; and (4) 24 h urinary epinephrine and nor-epinephrine.

As lesions larger than 10 cm have a risk of internal hemorrhage , these should be removed . However lesions smaller than 6 cm be followed – up for 6-12 months. Adrenocortical carcinoma may be functional with a clinically cushing's like or it may be mixed syndrome as cushing's with virilisation. Virilisation is due to dehydroepiandrosterone and dehydroepiandrosterone sulphate rather than testosterone . Adrenocortical carcinoma is a rare neoplasm with poor prognosis, it has to be differentiated from adenoma, pheochromocytoma or a renal cell carcinoma infiltrating the adrenal gland. Tumours , if more than 95 g is usually malignant.

The average age of a person diagnosed with an adrenal gland tumours is between 45 and 50 , our study shows that approximately 78% of adrenal tumours are detected due to symptoms related / unrelated to tumours and 40% are usually functional.

Both the clinical and biochemical features of pheochromocytomas result largely for the over-production of catecholamine with over half of patients developing marked hypertension. In our study also we found that hypertension was the commonest symptom however we found wide age range of our patients. Accompanying complaints of weight loss , headache and palpitations are fairly common presentation .

Adrenal adenoma , a benign lesion usually affects women , which has also been our observation showing all females with this tumour with age range of 30-45 years. Adrenal cortical carcinoma is rare highly aggressive tumour , incidence ranging for 0.5 to 12 per million (0.6 to 2 per million) . It accounts for 0.05 % to 2% of all malignancies . There is bimodal age distribution with peak incidence in the first and fifth decades of the life. The gender distribution amongst patients with adrenal carcinoma appears to vary in different series , still females are commonly affected . Virilisation by androgen secreting tumours is common phenomenon in children , its rate is much lower in adults . In children it has less aggressive clinical course and responds better with surgery and other therapeutic modalities as compared to adults.

V. Conclusion:

A careful history, a thorough physical examination and judicious use of laboratory screening test, with particular attention to symptoms and signs of hormonal activity that might be ignored by the patient, are important in determining the likelihood of functioning tumours, especially in patients with hypertension. In the asymptomatic patient, the minimal screening for hormonal activity consists of serum potassium level to exclude aldosteronoma and a determination of urinary levels of VMA and catecholamines, to exclude pheochromocytoma. In our experience, CT is better than MRI in detecting and localizing adrenal tumour, and MRI is more helpful than CT in distinguishing benign and malignant tumours, by comparing signal intensities and by contrast enhancement with gadolinium DTPA. Adrenal tumours may be treated surgically or therapeutically; removing the tumour by surgery is the only curative course.

Surgery is principally indicated for functional adrenal tumours regardless of their hormonal activity and pheochromocytoma with or without symptoms. We recommend that any adrenal solid mass of < 3 cm. except for a simple cyst should be excised, because: (i) there is still a possibility of malignancy and function even in small adrenal mass; (ii) the question remains whether there are ways to diagnose adrenal malignancy other than by operation (iii) adrenalectomy avoids long-term follow-up, especially in younger patients; (iv) the mortality of adrenal surgery is presently nearly zero and the morbidity is low.

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P. Senthilkumar," Primary Adrenal Tumors –Our Experience:." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 10, 2018, pp 27-29.