ORIGINAL RESEARCH PAPER

Medical Science

KEY WORDS:

EVALUATION AND MANAGEMENT OF INCIDENTALLY DISCOVERED ADRENAL MASSES(INCIDENTALOMAS) AT A TERTIARY CARE HOSPITAL

Wasim Raja

Azher Mushtaq

Ankush Banotra

INTRODUCTION

The adrenal glands were first described by the Italian anatomist Bartolomeo Eustachi in 1563. The adrenal glands are mustard coloured structures positioned superior and slightly medial to the kidneys in the retroperitoneal space, flattened and roughly pyramidal or crescent shaped weighing 4 gms each, they are among the highly perfused organs of the body. The German comparative anatomist Albert Von Kolliker is credited with first identifying two distinct portions of the adrenal gland, the cortex and the medulla. Each adrenal gland is composed of 2 distinct parts: the adrenal cortex and the adrenal medulla. The cortex is divided into 3 zones. From exterior to interior, these are the zona glomerulosa, the zona fasciculata, and the zona reticularis.

Edward Kendall, Tadeus Reichitein and Philpi Hench jointly received the 1950 Nobel Prize in Physiology and Medicine for their groundbreaking work on adrenocortical hormones. The adrenal cortex secretes 3 types of hormones: (1)

mineralocorticoids (the most important of which is aldosterone), which are secreted by the zona glomerulosa; (2) glucocorticoids (predominantly cortisol), which are secreted by the zona fasciculata and, to a lesser extent, the zona reticularis; and (3) adrenal androgen (mainly dehydroe piandrosterone [DHEA]), which is predominantly secreted by the zona reticularis, with small quantities released from the zona fasciculate.The adrenal medulla is a completely different entity secreting epinephrine (80%) and norepinephrine (20%), with minimal amounts of dopamine.Tumors of the adrenal Gland are divided into those arising from the cortex and those from the medulla. The tumors may further be subdivided into" benign" and "malignant" or as functioning versus non-functioning tumors. Adrenals are also a good sanctuary for secondary deposits from many organs[1]. Cortical adrenal tumors can be adenomas (cortisol, aldosterone or non-steroid producing), carcinomas (steroid or non-steroid producing) or hyperplasia (primary or secondary due to increased ACTH). Adrenal medullary tumors can be adenomas(pheochromocytoma, neuroblastoma, or ganglionueroma) or carcinoma. Metastatic tumors in adrenal glands can come from lung, breast, lymphoma etc. Miscellaneous adrenal tumors include myelolipoma, haemartoma, black adenoma, haemangioma, teratoma and cystic disease (hydatid and pseudocyst).[2]

Incidentally discovered adrenal masses, also termed clinically inapparent adrenal masses or incidentalomas,are the masses discovered through imaging performed for unrelated nonadrenal disease.Their existence as a clinical entity is a byproduct of advanced medical imaging .Incidentalomas were first described in the early1980s,when CT scanners became more prevalent in develpoed nations,and they have become a common clinical problem as the use of CT and MRI became widespread. Incidentalomas have been found in 2.1% of autopsies and 1% to 4% of abdominal imaging studies [3] the prevalence has increased to more than 4% in patients older than 60 years. we performed this study to identify the nature and consequent management of various adrenal incidentalomas at a tertiary care hospital in north india.

MATERIALS AND METHODS:-

This is a hospital based descriptive study conducted at GMC Srinagar from 2015 to 2021 by the department of general surgery in collaboration with department of radiodiagnosis and department of endocrinology. The study included a total number of 44 patients.

All the patients who were discovered with an incidentaloma either by ultrasonography or computed tomography or MRI were taken in the study.Evaluation began with history taking, with a focus on prior malignancy, hypertension, and symptoms of glucocorticoid or sex steroid excess. All these patients were subjected to a proper endocrinological workup and furthur imaging/investigations to characterize the lesion. . During the evaluation of an adrenal mass, 3 questions were kept in mind:

(1) Is the tumor hormonally active?
(2) Does it have radiologic characteristics suggestive of a malignant lesion? and
(3) Does the patient have a history of a previous malignant lesion?

Before consideration of surgical resection, a high degree of certainty of the diagnosis was made, patients with an adrenal incidentaloma were evaluated clinically, biochemically, and radiographically for signs and symptoms of hypercortisolism, aldosteronism (if hypertensive), the presence of a pheochromocytoma, or a malignant tumor.[4]

The screening protocol in suspected pheochromocytoma included measurement of urinary catecholamines metabolites (VMA). The workup for adrenal cortical tumors included dexamethasone suppression tests (DST), while for suspected aldodsteronoma, a plasma-renin ration was done.Biochemical investigations for hormonally active tumors were followed by consideration of size criteria. In a general sense,surgery was recomended for hormonally active tumours and those that carry a significant risk of malignancy.Adrenocortical carcinomas comprise less than 2% of adrenal tumors measuring 4cm or smaller and roughly 6%of those measuring 4 to 6cm Tumors larger than 6cm carry a more than 25% risk of malignancy. Our practice was to remove all incidentalomas measuring 5cm or larger and to consider strongly removal of those measuring 3 to 5 cm[5].Factors that were considered in surgical decision making for this latter group included suspicious imaging characteristics(e.g heterogeneity, high attenuation,irregular margins), patient age and surgical risk, growth on interval imaging, and patient preference.

RESULTS AND OBSERVATIONS:-

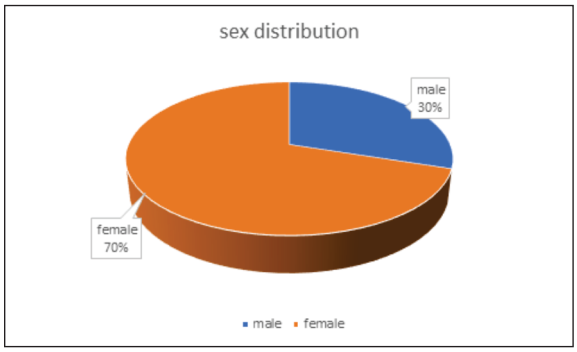
The age distribution of study population was as under:-

Most of the patients belonged to age group of 35-45 years.

Age group	No. Of patients	Percentage
25-35	07	15.9%
35-45	17	38.6%
45-55	09	20.45%
55-65	06	13.63%
65-75	05	11.3%

Most of the incidentalomas were found on left side and most of

the patients were of female sex (70%).



In our study, most of the tumours were benign. Among benign tumours, 65.90 % were non-functioning adenomas.

The subtypes of incidentalomas discovered were as under:-

Tumour	No. of patients	Percentage
Non functioning adenoma	29	65.90%
Cushing's adenoma	04	9.09%
Pheochromocytoma	03	6.81%
Adrenocortical carcinoma	01	2.27%
Aldosteronoma	01	2.27%
Myelolipoma	02	4.54%
Adrenal cyst	03	6.81%
Metastasis	01	2.27%

In case of non- functioning adenomas, size in centimeters as picked up by computed tomography was taken into consideration. Our practice was to remove all incidentalomas measuring 5cm or larger and to consider strongly removal of those measuring 3 to 5 cm.Factors that were considered in surgical decision making for this latter group included suspicious imaging characteristics(e.g heterogeneity, high attenuation,irregular margins), patient age and surgical risk, growth on interval imaging, and patient preference.When observation was chosen for these lesions,repeat imaging in 6 to 12 months was done.

DISCUSSION:-

Incidentally discovered adrenal masses, also termed clinically inapparent adrenal masses or incidentalomas,are discovered through imaging performed for unrelated nonadrenal disease.Their existence as a clinical entity is a byproduct of advanced medical imaging .Incidentalomas were first described in the early1980s,when CT scanners became more prevalent in develpoed nations,and they have become a common clinical problem as the use of CT and MRI has become widespread.Incidentalomas have been found in 2.1% of autopsies and 1% to 4% of abdominal imaging studies[4].the prevalence has increased to more than 4% in patients older than 60 years. A hospital based observational study on incidentally discovered adrenal masses (incidentalomas) was conducted at GMC Srinagar from 2015 to 2021. The study was conducted in the department of general surgery in collaboration with department of radiodiagnosis and department of endocrinology. The study included a total number of 44 patients.

Most of the patients belonged to age group of 35-45 years[6], with female preponderance[7].Khanna S and Vasilev V also observed that most patients were of this age group and there was a female preponderance. Although, the differential diagnosis of incidentalomas is extensive, majority of the masses were benign with non-secreating cortical adenomas account for majority of masses (65.90%), Cushing'sadenoma (9.09%),pheochromocytoma(6.81%),adrenocorticalcarcinoma(2.27%),Aldosteronoma(2.27%), Myelolipoma(4.54%) , Adrenal cyst(6.81%) , Metastasis (2.27%).Aron DC[8] observed similar results.Most of the functional adrenal tumours were dealt by laparoscopic adrenalectomy. However some of the cases were dealt by open adrenalectomy.Zeiger MA[9] etal also maintained that functional or malignant adrenal masses require immediate management and surgical excision is the treatment of choice for these tumours.For non functional tumours, tumours larger than 5 cm were taken for surgery.In our study, about 12 % of non – secreating adenomas were larger than 5cm, 23% were of size 3-5cm and 65% were of size <3cm. Masses of size between 3-5 cm were also strongly considered for surgical removal.Factors that were considered in surgical decision making for this latter group included suspicious imaging characteristics(e.g heterogeneity, high attenuation,irregular margins), patient age and surgical risk, growth on interval imaging, and patient preference.When observation was chosen for these lesions,repeat imaging in 6 to 12 months was done.Herrera MF[10] et al reported a malignancy rate of only1.5% in their series of 342 patients and all were >5cm in size. All patients were followed for a period of 18 months.

CONCLUSION:-

Incidentalomas are reported in 1.4% of abdominal CT scans.They are reported mostly in age group of 35-45 years with female preponderance. Most of the tumours are benign with non functional cortical adenomas representing most of them. With advancement in anesthesia and surgical care and technology, functional cortical adenomas and non functional cortical adenomas larger than 5 cm are better dealt by surgical excision both for symptomatic relief as well as to alleviate patients anxiety with minimum morbidity . Laparoscopic adrenalectomy is the treatment of choice.

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