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Determination of adrenal lesions in patients visiting department: A CT scan study

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Abstract

Background: Incidental adrenal masses are discovered more frequently on CT scanning. The present study was conducted to determine adrenal masses using CT scan.

Materials & Methods: The present study was conducted on 48 patients of suspected adrenal gland lesions of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study.

General data such as name, age, gender etc. was recorded. Symptoms such as hypertension, headache, sweating and palpitations, moon-shaped face, proximal muscle weakness, truncal obesity and buffalo hump were recorded. All patients underwent CT scan using Toshiba Aquillion CT scanner (16 slice).

Results: Out of 48 patients, males were 21 and females were 27. Common lesions were adenoma seen in 32, cyst in 6, metastatic cancer in 6, lipoma in 2, hyperplasia in 1 and pheochromocytoma in 1. The difference was significant ($P < 0.05$). 28 had headache, 31 had sweating, 35 had muscle weakness, 24 had buffalo hump and 28 had moon shaped face.

Conclusion: Authors found that common adrenal lesion in patients were adenoma followed by cyst, metastatic cancer.

Keywords: Adrenal, adenoma, CT scan

Introduction

The widespread use of abdominal computed tomographic scanning (CT) and ultrasonography has increased the detection of incidental renal and adrenal masses that are found on imaging for problems unrelated to the kidneys or adrenal glands. Based on careful clinical assessment, imaging studies and selected screening laboratory tests, family physicians can diagnose most of these masses and determine the need for referral^[1].

Incidental adrenal masses are also being discovered more frequently on CT scanning and ultrasound examinations. Most adrenal masses are detected first on abdominal CT scans, with an incidence of 0.6 to 1.3 percent on such scans. The vast majority of asymptomatic adrenal masses are benign, and patients with these lesions do not require subspecialist referral or treatment^[2].

Distinguishing benign from malignant adrenal disease is essential, as an accurate diagnosis will inform management, which can entail doing nothing, performing further investigation, or instituting definite local and/or systemic therapy. Adrenal imaging has undergone significant evolution in the past decades as new techniques and technologies are being applied to adrenal disease work-up^[3].

To determine whether an adrenal mass is functioning, the patient should be assessed for signs and symptoms of Cushing's syndrome, pheochromocytoma or hyperaldosteronism. Cushing's syndrome is characterized by hypertension, moon-shaped face, proximal muscle weakness, truncal obesity, buffalo hump, thin skin, abdominal striae and easy bruising. Classic features of pheochromocytoma include paroxysmal hypertension, headache, sweating and palpitations. Hypertension, hypokalemia and hypernatremia characterize hyperaldosteronism^[4]. The present study was conducted to determine adrenal masses using CT scan.

Materials and Methods

The present study was conducted in the department of Radiodiagnosis. It comprised of 48 patients of suspected adrenal gland lesions of both genders.

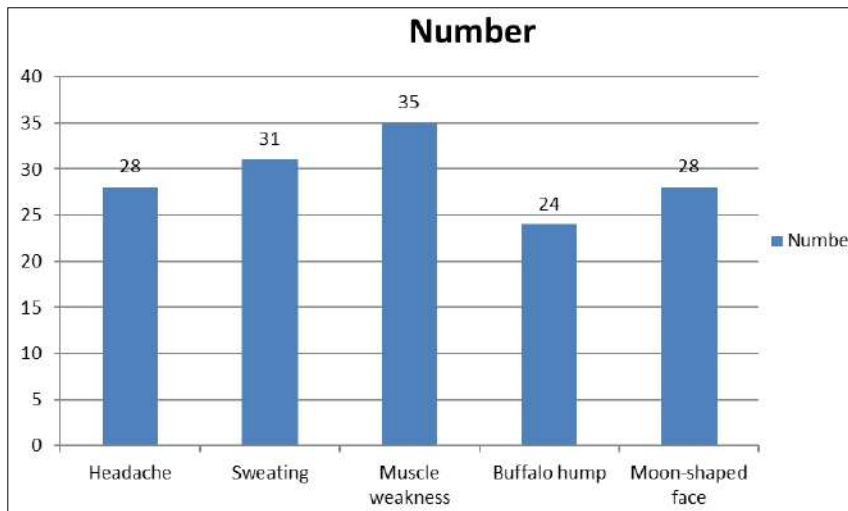
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All were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study. General data such as name, age, gender etc. was recorded. Symptoms such as hypertension, headache, sweating and palpitations, moon-shaped face, proximal muscle weakness, truncal obesity and buffalo hump were recorded. All patients underwent CT scan using Toshiba Aquillion CT scanner (16 slice). Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of patients

| Total- 48 | | |
|-----------|-------|---------|
| Gender | Males | Females |
| Number | 21 | 27 |



Graph 1: Signs & symptoms in patients

Graph I shows that 28 had headache, 31 had sweating, 35 had muscle weakness, 24 had buffalo hump and 28 had moon shaped face.

Discussion

The adrenal glands, because of their retroperitoneal location, are difficult to evaluate by physical examination and conventional radiological techniques. This has limited the detection of benign and malignant adrenal neoplasms to those tumors causing local symptoms due to massive enlargement or systemic manifestations of excess hormone production [5]. At this stage, malignant tumors are often incurable, and hormone producing tumors have already caused substantial morbidity and even mortality. Technical advances now allow visualization of normal adrenal glands by computed tomography (CT), and the possibility arises that adrenal neoplasms may be diagnosed at an earlier or even preclinical stage [6]. The present study was conducted to determine adrenal masses using CT scan.

We found that out of 48 patients, males were 21 and females were 27. Common lesions were adenoma seen in 32, cyst in 6, metastatic cancer in 6, lipoma in 2, hyperplasia in 1 and pheochromocytoma in 1.

Adrenal cystic lesions account for only about 6% of incidentally detected adrenal lesions. Endothelial cysts account for the majority (45%), followed by pseudocysts from prior infection or trauma (39%), and parasitic

Table 1 shows that out of 48 patients, males were 21 and females were 27.

Table 2: Type of lesions

| Type of lesions | Number | P value |
|-------------------|--------|---------|
| Adenoma | 32 | 0.01 |
| Cyst | 6 | |
| Metastatic cancer | 6 | |
| Lipoma | 2 | |
| Hyperplasia | 1 | |
| Pheochromocytoma | 1 | |

Table 2 shows that common lesions were adenoma seen in 32, cyst in 6, metastatic cancer in 6, lipoma in 2, hyperplasia in 1 and pheochromocytoma in 1. The difference was significant ($P < 0.05$).

infection, usually echinococcal in origin (7%). True cysts and pseudocysts have liquid contents, and can be recognized as homogenously near-water attenuation lesions on non-enhanced CT, unless complicated by hemorrhage, which results in an increase in attenuation [7].

Pheochromocytoma is a catecholamine-secreting neuroendocrine tumor of the adrenal medulla; in 10% of cases, however, it is found along the sympathetic chain, and as such is termed paraganglioma. Annual incidence is 0.8/100,000, accounts for 0.6% of patients with hypertension, and represents up to 5% of incidentally discovered nodules [8].

We observed that common symptoms amongst patients were 28 had headache, 31 had sweating, 35 had muscle weakness, 24 had buffalo hump and 28 had moon shaped face. Prinz *et al.* [9] found that nine patients were identified with a unilateral adrenal mass as an incidental finding on abdominal CT scan. This group consisted of five men and four women who ranged in age from 41 to 73 years (mean, 58 years). Each patient was studied by a 5-s CT scanner. Eight of the nine patients had a history of hypertension. None had clinical findings suggestive of Cushing's syndrome or of a masculinization or feminization syndrome. None had persistent hypokalemia. After an adrenal mass was noted on CT scan, the possibility of a hormone-producing tumor was considered in each patient.

Metastasis to the adrenal gland represents the second most

common adrenal mass, after adenoma. The most common tumors to metastasize to the adrenal gland are lung (39%) and breast cancer (35%), with melanoma and renal, colon, rectal and thyroid carcinomas making up the majority of the remaining primary malignancies. At autopsy, 10–27% of individuals with a primary malignancy have adrenal metastasis, and roughly 50% of adrenal masses identified on oncologic imaging represent metastatic disease^[10].

Conclusion

Authors found that common adrenal lesion in patients were adenoma followed by cyst, metastatic cancer.

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