Usefulness of assessment of urinal metoxy catecholamines secretion in everyday clinical practice - Pheochromocytoma as diagnostic challenge.

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**OBJECTIVES**

Adrenal incidentaloma is an adrenal mass found on imaging studies done for other reason than suspected adrenal disease. The majority of them are non-functioning adenomas, however pheochromocytomas could be also observed. Currently, in diagnosis of incidentaloma, the assessment of hormones of adrenal cortex and medulla is performed. The aim of the study was to assess the incidence of pheochromocytoma in patients with incidentaloma.

**METHODS**

Medical records of 380 patients with incidentaloma, hospitalized during 14 months (between April 2014 and July 2015) in our Clinic were retrospectively reviewed. Diagnostic imaging pictures (magnetic resonance imaging - MRI or computed tomography - CT), the incidence of hypertension, urine metoxy catecholamines secretion (normetanephrine or metanephrine), as well as hormonal assessment of adrenal cortex were analyzed.

**RESULTS**

Seventy eight percent of patients (296 of 380) were hypertensive. Most of lesions have benign features on imaging study (261 patients of 339 cases with known description of tumors in CT or MRI, which contains 92.6% of that cases - in the rest 41 patients only CT scans without assessment of density were performed.) In this group were patients with adenoma-like tumors and lesions characterised clearly as myelolipoma.

There were only nine histologically confirmed pheochromocytomas, which comprises 2.37% of all cases. In the literature, the prevalence of pheochromocytoma in adrenal incidentaloma is higher and stands at 3.1% [1]. In those 8 patients, only one person have adenoma-like characteristics on imaging study. However, the attenuation value on unenhanced CT in this case were higer than 10HU. Some cases of pheochromocytoma which mimics adrenal adenoma have been already reported [2]. Nevertheless, the likelihood of a pheochromocytoma in adrenal lesions with imaging criteria of an adenoma is extremely low [3].

Accurate levels of metoxy catecholamines were known in 304 patients of total 380. Forty three patients (14%) have elevated level of metoxy catecholaminers (normetanephrine [N 88.0-440.0ug/24h] or metanephrine [N 52.0-341.0ug/24h]). Positive value was specified as higher than the upper limit of normal. In this group of 43 patients, seven (16.3%) patients have histologically confirmed pheochromocytoma.

Thirty five patients don't have pheochromocytoma in spite of elevated metoxy catecholamines. The percentage of false positive results in our study was significantly higher (81.4%), compared to 34% presented in another article [4]. It was probably related with larger group (seventy patients) and different characteristics of the patients (including not only incidentalomas, but also tumors with suspicion of pheochromocytoma) in cited study.

Thirty two patients with elevated metoxy catecholamines have hypertension. Only 3 patients with elevated normetanephrine weren't hypertensive. Patients with hypertension have higher level of normetanephrine (maximum result was 632 ug/24h, compared to 512.6 ug/24h in nonhypertensive patients). None of patients with false positive results has elevated metanephrine, contrary to patients with confirmed pheochromocytoma. The opposite results were showed by Cath et al [5].

The differences in concentration of normetanephrine were also observed between group of cases with false positive results and pheochromocytomas, as it was shown on graph 3. The cut-off point of elevated normetanephrine diagnostic for pheochromocytoma in our study was comparable to that noticed in other article [5].

Moreover, 2 patients with pheochromocytoma have unelvated metoxy catecholamines secretion with benign features on imaging study in one of those patients. Few retrospective studies suggest that metanephrines may be normal in up to 25% of patients with normotensive incidentally discovered pheochromocytomas [3].

**CONCLUSIONS**

1. The assessment of urine metoxy catecholamines secretion seems to have limited usefulness in diagnosis of pheochromocytoma in incidentalomas, mainly because of low incidence of elevated level of metoxy catecholamines and possibility of false positive results.

2. Normal level of urine metoxy catecholamines secretion were also observed in some patients with pheochromocytoma.

3. In diagnosis of pheochromocytoma, clinical symptoms and radiological imaging picture should play the most important role.

4. Assessment of urine metoxy catecholamines secretion should be performed in justified cases.

**REFERENCES:**


