

ADRENOCORTICOTROPIN-PRODUCING PITUITARY ADENOMA DETECTED WITH ^{99m}Tc-HEXAKIS-2-METHOXY-ISOBUTYL-ISONITRILE SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY. A CASE REPORT

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Abstract

Cushing's disease (CD) is an adrenocorticotrophic hormone (ACTH) mediated multisystemic state of adrenal hypercortisolism. An ACTH secreting benign pituitary tumor (adenoma) is the most common cause in the majority of patients with CD.

Case report. This article describes a case of a 56-year-old woman presenting with clinical manifestations of hypercortisolism, with high plasma cortisol and ACTH levels that was suppressed with high-dose dexamethasone administration, suggestive of CD. Pituitary magnetic resonance imaging (MRI) of the sellar region was inconclusive. During the single photon emission computed tomography (SPECT) examination, an increased accumulation of technetium - 99m - hexakis - 2 - methoxy - isobutyl-isonitrile (^{99m}Tc-MIBI) in the pituitary gland area was noticed. Finally, response to corticotropin-releasing hormone (CRH) and ghrelin stimulatory testing, differentiated CD from ectopic ACTH and primary adrenocortical hypersecretion.

Conclusion. We highlight the potential of ^{99m}Tc-MIBI SPECT as sensitive and specific method of pituitary gland adenoma detection in patients with Cushing's disease, when MRI fails to directly detect an adenoma and stimulatory tests with CRH and ghrelin are not in routine diagnostics.

Key words: Pituitary adenoma, Cushing's disease, ^{99m}Tc-MIBI.

INTRODUCTION

Tumors arising from the pituitary gland itself are frequently encountered intracranial neoplasms (10%-15% of all primary brain tumors) (1, 2) of unknown etiology, owing to the fact that hypothesis of pituitary oncogenesis has vacillated in the last two decades (3). Most of them are benign tumors (adenomas), while

primary malignant tumors are extremely rare and account for only 0.2% of all pituitary tumors (4).

The wide range of incidence of adenomas rates across individual studies from 2.70 (5) to 3.13 per 100.000 per year (6). Adenomas are benign, indolent, slow-growing masses which in about 70% of cases are associated with a heavy clinical burden due to symptoms and signs of excessive hormone secretion (2, 4). However, about 30% of them behave aggressively such as optic chiasm and cavernous sinus invasion (3, 4).

Of hormonally active adenomas, 1% to 10% (2, 4) secrete adrenocorticotrophic hormone (ACTH) causing Cushing's disease (CD), a pituitary-dependent ACTH mediated state of hypercortisolaemia (7). Although CD is the most common cause of endogenous hypercortisolaemia it still remains a rare disease whose current incidence ranges between 1.2 and 2.4 (8, 9) patients per million per year, with an increasing trend (9).

Confirmation of the diagnosis of an adenoma requires not only laboratory evidence of sustained hyperfunction, but also radiographic evidence (2, 10). The frequency of diagnosis of pituitary tumors has increased with an extensive use of standardized magnetic resonance imaging (MRI) protocols (10). On the other hand, pituitary adenomas can also be detected by single photon emission computed tomography (SPECT) of the sellar region using technetium - 99m - hexakis - 2 - methoxy - isobutyl-isonitrile (^{99m}Tc-MIBI) (11, 12).

In this report, we present a case of functioning pituitary adenoma discovered on a ^{99m}Tc-MIBI scan, in patients with CD, which had not been observed during MRI scanning despite the clinical features of the disease.

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