^{131}I-MIBG Scintigraphy in Double Focuses Pheochromocytoma*

Hak Hee Kim, M.D., **Soo Kyo Chung**, M.D., **Sung Hoon Kim**, M.D.
Young Ha Park, M.D., **Yong Whee Bahk**, M.D. and **Kyung Sub Shinn**, M.D.

Department of Radiology, Catholic University Medical College, Seoul, Korea

=국문초록=

이중병소를 가진 갈색종의 ^{131}I-MIBG 신티그라피

가톨릭대학 의학부 방사선과학교실

김학희 · 정수교 · 김성훈 · 박영하 · 박용휘 · 신경섭

갈색종은 비교적 드문 종양으로 다발성으로 생기는 경우는 더욱 드물다. 갈색종은 수술로 90%이상 완치가능한 질환이므로 수술전 종양의 위치와 범위를 정확히 확인하는 것이 매우 중요하다.

저자들은 최근 파동하는 고혈압을 주소로 내원한 33세 남자환자에서 복부전산화 단층촬영술상 우측부신의 종양만을 확인할 수 있었으나, ^{131}I-MIBG 신티그라피에서는 우측 부신의 병소외에 골반강내에 또다른 병소가 발견되어 골반강 전산화 단층촬영술을 추가로 시행하였고 이어 수술로써 확진된 이중병소의 갈색종 1예를 보고하는 바이다.

INTRODUCTION

Pheochromocytoma is a rare tumor in general population and uncommon cause of hypertension, occuring in 0.1 to 0.2 percents[1]. They are extra-adrenal in location in approximately 10%, multicentric in about 10%. and bilateral in 5% of cases[2]. When a patient with a suspected pheochromocytoma is referred for localization, generally the initial CT examination is of the adrenal glands. If the CT examination success to reveal an adrenal tumor, we usually do not extend the examination to other locations because of the relative infrequency of multicentricity[3].

However we shoud not ignore the possibility of multicentricity or metastasis. Since the outcome of therapy is ultimately dependent on accurate localization, every effort should be paid to fully define the location and extent of tumors. In this regard, meta-iodobenzylguanidine (MIBG) scan is very helpful for screening the multifocal pheochromocytoma.

The authors report a case of histologically proven double focuses pheochromocytoma in the adrenal and pelvic locations, and on initial CT we could not find the pelvic lesion which is identified on MIBG scan.

CASE REPORT

A 33-year-old man was admitted because of fluctuating hypertension for several years. Laboratory findings showed elevated urinary norepinephrine (375.7 μg/day), normetanephrine (31.79 μg/day) and vanillylmandelic acid (14.29 mg/day) in 24 hour urine collection. Clinically pheochromocytoma was suspected, so abdominal CT scan was performed. On CT scan, a 4×5×6 cm enhancing mass with

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a central low density was noted in the right adrenal region (Fig. 1). MIBG scan was performed using a large-field-of-view gamma camera with a high energy, parallel-hole collimator at 24 and 48 hours after injection of 0.5 mCi I-131 MIBG. Tc-99m DTPA renal scintigraphy was also performed for anatomical orientation. MIBG scan showed increased uptake at the right adrenal region corresponding to CT finding, and an another small focal increased uptake at pelvic area (Fig. 2). For further evaluation and localization of the pelvic lesion, pelvic CT scan was performed and revealed a 1.5× 1.5 cm enhancing mass in pelvic cavity just anterior to sacral promontory (Fig. 3).

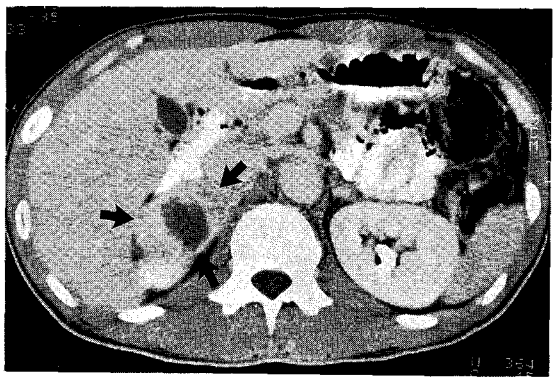

Fig. 1. Abdominal CT with contrast enhancement demonstrates a solid enhanced mass in the right adrenal gland with a central area of low attenuation (arrows).

At surgery, there were an about 6 cm sized well encapsulated soft tissue mass in right adrenal gland and an another 1.5 cm sized firm mass in retroperitoneum just anterior to the sacral promontory. A

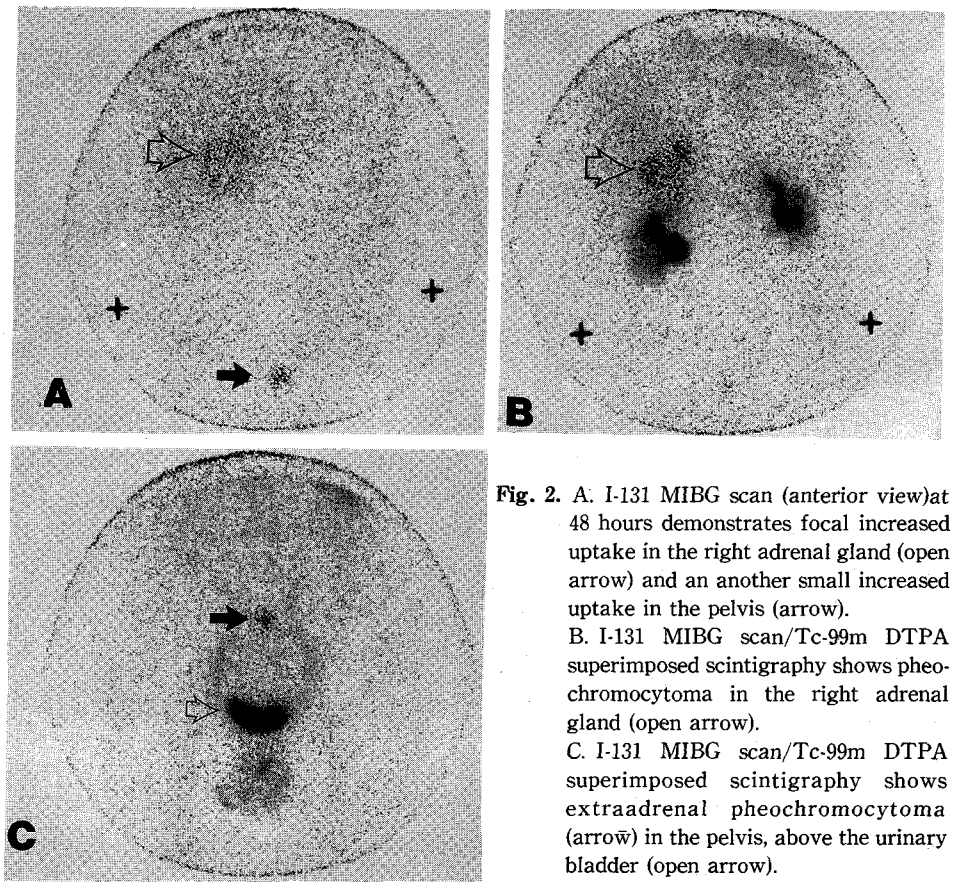

Fig. 2. A. I-131 MIBG scan (anterior view)at 48 hours demonstrates focal increased uptake in the right adrenal gland (open arrow) and an another small increased uptake in the pelvis (arrow).
B. I-131 MIBG scan/Tc-99m DTPA superimposed scintigraphy shows pheochromocytoma in the right adrenal gland (open arrow).
C. I-131 MIBG scan/Tc-99m DTPA superimposed scintigraphy shows extraadrenal pheochromocytoma (arrow) in the pelvis, above the urinary bladder (open arrow).

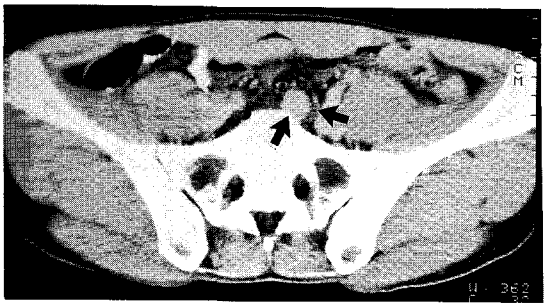

Fig. 3. Pelvic CT shows a 1.5 cm sized well defined soft tissue density mass in pelvic cavity just anterior to sacral promontory (arrows).

nerve is firmly adhered to posterior aspect of the small mass in the pelvis. After surgical removal of the tumors, dramatic reversibility of the hypertension was noted. Histopathology confirmed the diagnosis of double focuses pheochromocytoma.

DISCUSSION

Pheochromocytoma is generally but not invariably benign tumor of the adrenal medulla and paraganglia. The peak incidence occurs in the forth to fifth decades with equal sex distribution[1]. They arise from chromaffin cells with the most frequency in the adrenal glands (90%), the remaining originate in the autonomic nervous tissue, particularly the organ of Zuckerkandl and in the parasympathetic ganglia. They are multicentric in about 10% of cases and malignant in 5~10%. The diagnosis of malignancy is based on the presence of tumor cells in areas where chromaffin cells do not occur, such as lymph nodes, muscle, bone, liver, or local invasion of other tissues adjacent to the tumor[2].

The methods of management of patient with pheochromocytoma are surgery, medical treatment and radiation therapy. The surgical management is often complex, yet with treatment of choice, cure rates of 90% can be achieved. The basis of successful surgical treatment lies in the accurate preoperative localization of the tumors. Although the majority of pheochromocytomas are intraadrenal in location, the possibility of multicentricity or metastasis should not be ignored. MIBG scintigraphy and CT in diagnosing pheochromocytoma are known as complementary methods[4~6]. CT has been advocated as the anatomic adrenal imaging examination of choice, but is less reliable when the tumor is extra-adrenal or malignant[5].

Extraadrenal disease can not be detected if the scan is only restricted to the adrenal region and does not encompass all potential sites of occurence from the skull base to the pelvis. CT is also incapable of differentiating between cortical and medullary masses or functioning and nonfunctioning lesions. Whereas the advantage of MIBG scan is to screen the whole body with high specificity and to locate extra-adrenal lesions or metastases of pheochromocytoma with better accuracy than CT[7]. So we think that CT should be followed by MIBG scan to search for potential extra-adrenal lesion or metastasis.

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