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A Case Report of the Human Chorionic Gonadotropin Producing Carcinoma of the Lung

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Summary: We experienced a 62-year-old man with human chorionic gonadotropin (HCG) producing carcinoma of the lung. The patient was admitted with gynecomastia and breast pain accompanying a high urinary HCG level. He underwent left upper lobectomy for primary lesion, and then segmental lung resection for a contralateral pulmonary metastasis 3 months later. Histological examination revealed a large cell carcinoma positive for HCG on immunohistochemical staining. Postoperative chemotheraphy with CDDP and VDS was not successful. He is still alive with residural 8 lesions at months after the initial operation.

Key Word: human chorionic gonadotropin, lung carcinoma, gynecomastia

Case Report

A 62-year-old man visited our hospital complaining couph and hemophysis since mid-September, 1991. He was admitted for further evaluation of abnormal chest X-ray findings. He was 157 cm tall and weighed 57 kg. Bilateral painful gynecomastia was noted on physical examination. Neither anemia nor jaundice was present and the superficial lymph nodes were not palpable.

Laboratory examination (Table. 1): There were no abnormalities detected by routine laboratory tests, except positivity for CRP. The tumor marker CEA was slightly elevated to 3.0 *u*g/ml, and serum estradiol level and urinary HCG level were abnormally high.

Table 1. Laboratory examination

WBC	7800	TP	6.5
RBC	468 × 10	A/G	1.47
Hb	14.1	TB	0.7
Ht	42.7	GOT	19
plate	24.9	GPT	17
Na	137	ALP	183
Cl	103	LDH	365
K	3.9	γ -GTP	21
Ca	4.2	CEA	3.0
BUN	10.3	AFP	< 0.01
Cre	1.0	estradiol (E2)	292
CPK	30	estriol (E3)	> 10
BS	84	prolactin	2.6
CRP	(+)	urine HCG	13200

Chest X-ray (Fig. 1): A well-demarcated 6X6 cm tumor was observed in the left upper lobe. Calcification was also seen in the right apex and appeared to represent old tuberculosis. The tumor in the left upper lobe had not been identifiable on a chest x-ray taken 2 year previously.

Chest computed tomography (Fig. 2): A homogeneous 6X6 cm tumor was located in the left upper lobe and

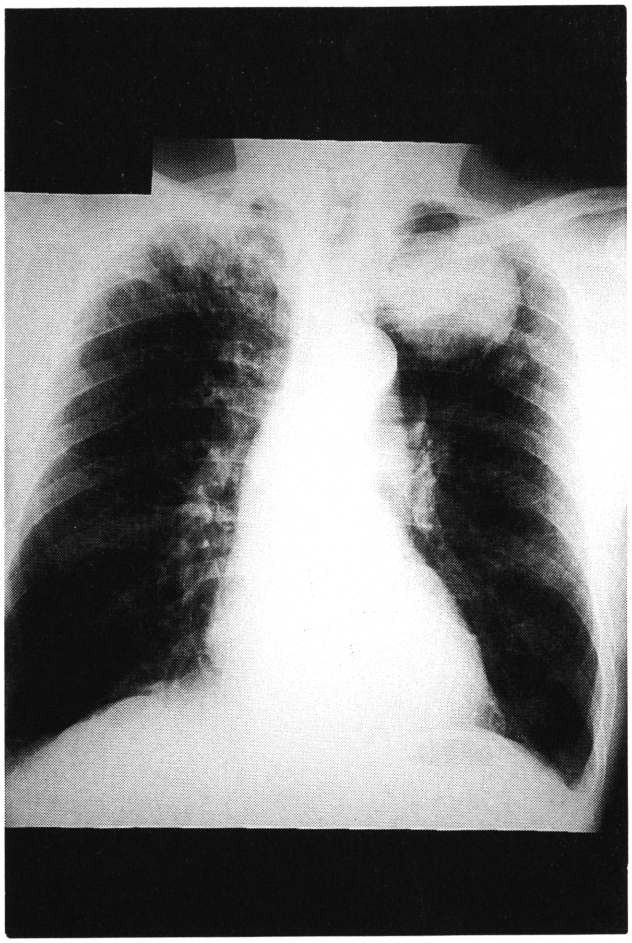

Fig. 1. Posterior-anterior roentogenogram of the chest

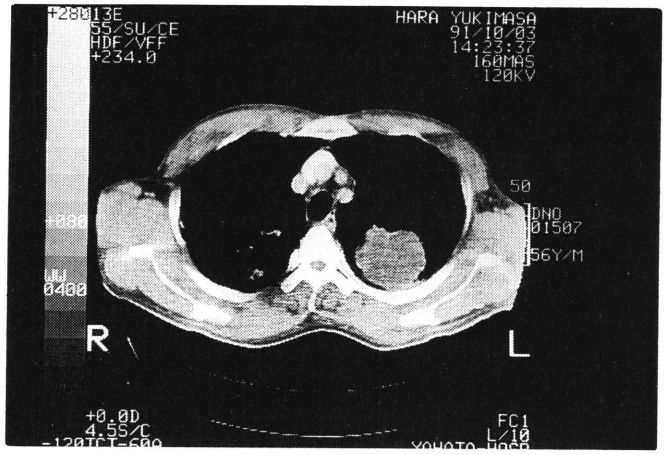

Fig. 2. Computed tomography of the chest

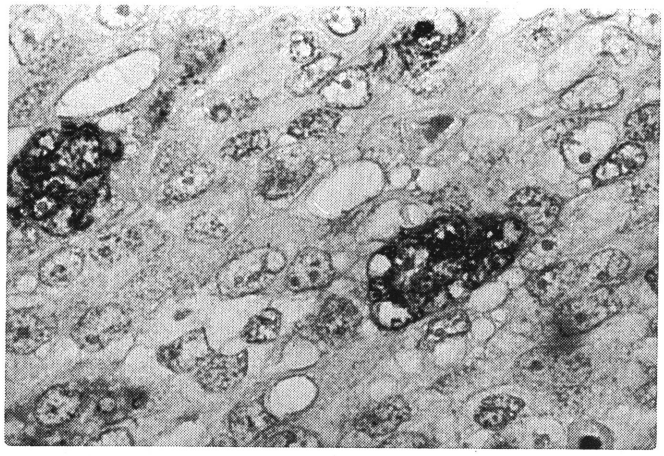

Fig. 3. Microscopic appearance of large cell carcinoma. (HCG-staining)

appeared to be partly attached to the pleura. No mediastinal lymphadenopathy was detected. The nodular iesion in the right apex again appeared to be old tuberculosis.

Cytology of sputum and bronchial brushing was reported to be class II . However, under a presumptive diagnosis of pulmonary carcinoma on the basis of the imaging findings, the patient underwent left upper lobectomy on October 16, 1991 and found to have a stage I disease (T2N0M0). Histologically, the tumor was large cell carcinoma that stained positively for HCG but was negative for CEA and AFP (Fig. 3).

Postoperative course (Fig. 4): Surgical treatment and two cycles of postoperative chemotherapy with CDDP and VDS temporarily reduced the serum HCG-beta and urinary HCG levels. A metastasis developed in the right lobe 2 months after surgery and the uppre lobe was partially resected on January 8, 1992. Histolosical examination showed squamous cell carcinoma consistent with the primary histology. Following the second operation, metastasis progressed in the bilateral lung fields despite 2 further courses of chemotherapy with CDDP and VDS. The serum and urinary HCG levels increased to 18,700 and 10,200 UL/ml, respectively. As CDDP appeared to have no activity against the disease, a regiman for choriocarcinoma (MTX and Act-D) was initiated. However, this had to be interrupted during the first cycle because of severe oral mucositis. He is still alive 8 months after the initial operation, and getting treatment with UFT (400 mg/day) as an outpatient.

Discussion

HCG-producing lung carcinoma is a relatively rare disease, and there have only been 34 cases reported since the first article by HATTORI et al. in 1979[1] (Table. 2). These patients comprised 29 males and 4 females with an avarage age of 64 years (range: 35 to 87 years). The chief complaints were abnormal chest x-ray and couph in most cases, and gynecomastia developed in 21 patients during the clinical course. Abnormalities found by laboratory exami-

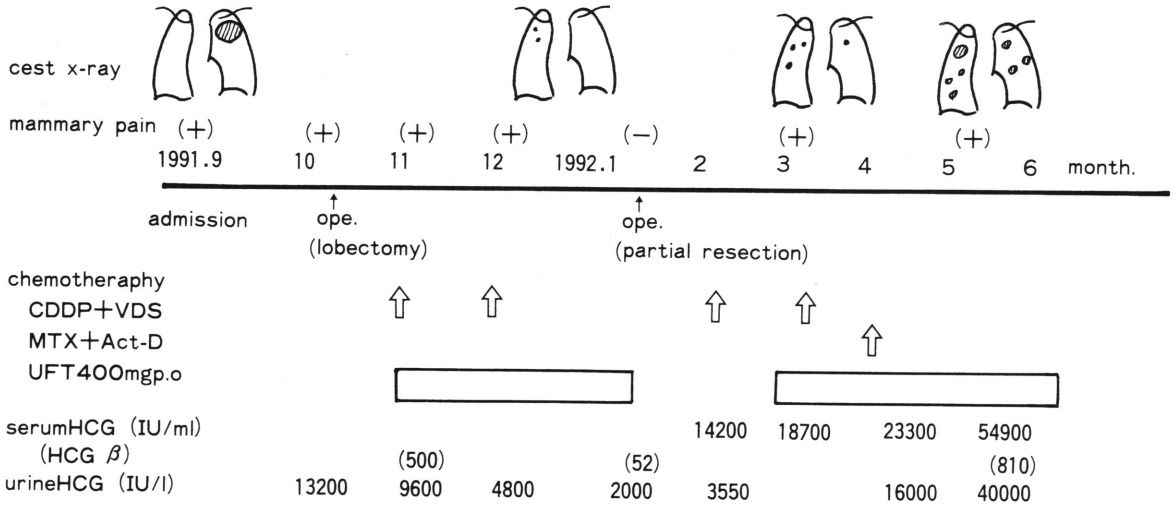

Fig. 4. Pre- and post operative course of chest x-ray, chemotherapy, and HCG hormones.

Table 2. Summary of 34 HCG producing carcinoma of the lung.

Case	Auhtor. Year	Age. Sex	Gyne-comastia	Operation	Pathology	Prognosis	Prognosis	CRP.	CEA.	Liver function	HCG -stein
1	HATTORI	(1979)	63. M	(+)	(-)	Small	3 months	(+)	/	N	/
2	KIKUOKA	(1980)	73. M	(+)	(-)	Large	Live	/	H	N	/
3	MATSUSHIMA	(1980)	74. F	(-)	(+)	Squam.	3 weeks	/	/	/	/
4	KATOH	(1982)	72. M	(+)	(-)	Squam.	/	(+)	H	N	/
5	KATAGAMI	(1982)	73. M	(+)	(-)	Adeno	5 months	(-)	H	N	(+)
6	OGAWA	(1983)	66. M	(+)	(-)	Large	9 months	(+)	H	H	(+)
7	IWASAKI	(1984)	81. M	(+)	(-)	Adeno	/	/	/	/	(+)
8	NAKATA	(1984)	68. M	/	(+)	Large	8 months	/	N	/	(+)
9	NINOMIYA	(1985)	39. M	(+)	(-)	Large	8 months	(+)	N	H	(+)
10	NISHINO	(1985)	50. M	(+)	(-)	Large	9 months	(+)	N	N	(+)
11	SATAKE	(1986)	78. M	(+)	(-)	Adeno	/	/	/	/	/
12	KAMEI	(1986)	73. M	(+)	(-)	Squam.	5 months	/	/	/	(+)
13	KONDOH	(1986)	70. M	/	(-)	Small	/	/	/	/	(+)
14	TAKAMATU	(1986)	76. M	(+)	(-)	Large	9 months	/	H	/	(+)
15	MIYAKE	(1986)	70. M	(-)	(+)	Large	3 months	/	N	/	(+)
16	MIYAKE	(1986)	70. M	(-)	(-)	Large	13 months	(+)	N	N	(+)
17	MATSUOKA	(1986)	59. M	(+)	(-)	Large	3 months	(+)	N	H	(+)
18	HIRUKAWA	(1986)	73. M	(+)	(-)	Small	Live	(+)	H	N	/
19	DATE	(1987)	65. F	(-)	(+)	Large	Live (5M)	(+)	N	N	(+)
20	YOSHIMOTO	(1987)	/	/	/	Adeno	/	/	H	/	(+)
21	MAEDA	(1987)	70. M	(+)	(-)	Large	/	/	/	/	(+)
22	KAMISHIRO	(1987)	73. M	(-)	(-)	Large	7 months	(+)	N	N	(+)
23	NUKAI	(1987)	40. F	/	(-)	Adeno	18 months	/	/	/	(+)
24	UEMURA	(1988)	76. M	/	(+)	Adeno	/	/	/	/	(+)
25	KAWAFUCHI	(1988)	87. M	(+)	(-)	/	21 months	/	/	/	(+)
26	SATOH	(1988)	35. M	/	(-)	Large	/	/	/	/	(+)
27	MATUMOTO	(1989)	59. M	(+)	(-)	Large	3 months	(+)	N	H	(+)
28	FUKUDA	(1989)	/	/	(-)	Large	/	/	/	/	(+)
29	NADA	(1990)	66. M	(+)	(-)	Large	3 months	(+)	H	H	(+)
30	NODA	(1990)	65. M	(+)	(-)	Large	12 months	(+)	H	H	(+)
31	NIIMI	(1990)	73. M	(+)	(+)	Large	/	/	/	/	(+)
32	BEPPU	(1991)	45. M	(+)	(-)	Large	3 months	(+)	/	H	(+)
33	SAITOH	(1991)	47. F	(-)	(+)	Squam.	Live (20M)	/	N	H	(+)
34	ITOH	(1992)	62. M	(+)	(+)	Large	Live (10M)	(+)	N	N	(+)

N: normal level, H: high level

nation included positive CRP and liver dys-function in most cases, and CEA was positive in 45%. The serum and urinary HCG levels, key indices for diagnosis, were high in all cases. The tumor histology was as follows: large cell carcinoma in 20 cases, adenocarcinoma in 5 cases, squamous cell carcinoma in 4 cases, and small cell carcinoma in 3 cases. Immunohistochemical staining demonstrated that HCG was positive in all tumors. Surgical resection was only feasible in 8 of 34 cases. The incidence of inoperable disease was quite high. The prognosis of this tumor generally apears to be poor and the longest survival after surgery is 20 months at the time of writing.[2] The mean duration of survival in fatal cases was only 4 months. Some authers[2-5] have reported good response to treatment with CDDP or MTX + CPM + Act-D or other chemotherapy, but in reality no regimen has proved efficacy to date including CDDP and VDS.

In conclusion, the characteristics pf HCG-producing lung carcinoma can be summarized as follows:

1) The incidence of gynecomastia is high.

2) CRP positivity and abnormal liver function are generally present.

3) The most common histologic type is large cell carcinoma with positive HCG staining.

4) Most patients present with inoperable advanced cancer and have a poor prognosis.

HCG-producing lung cancer should be suspected in patients with a pulmonary tumor accompanied by gynecomastia and pain in the breast.

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