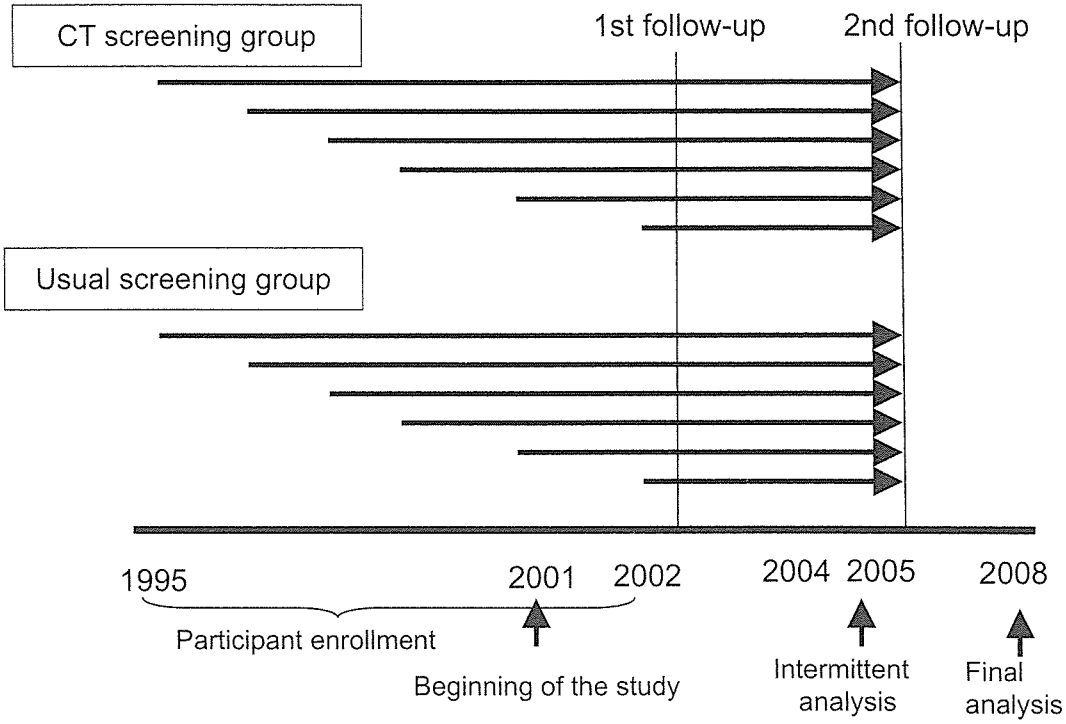

Figure 2. The Japan Lung Cancer Screening Study.

Table 3. Study Participants of Japan Lung Cancer Screening Study

	CT screening group		Usual screening group	
	Male	Female	Male	Female
Chiba	2,031	2,333	3,475	7,541
Tokyo	927	942	4,371	5,117
Hitachi	8,218	1,902	0	0
Niigata	5,306	1,323	7,972	4,147
Kanagawa	1,300	527	3,389	6,359
Osaka	2,766	1,925	4,181	9,201
Nagano	4,200	3,573	7,341	15,090
Okayama	827	57	1,168	122
Ehime	4,034	4,542	4,539	7,957
Total	29,609	17,124	36,436	55,534

Table 4. Crude Mortality of Japan Lung Screening Study

	CT screening group		Usual screening group	
	Male [104,055]	Female [59,078]	Male [179,246]	Female [283,881]
Lung cancer	76 (73.0)	10 (16.9)	180 (100.4)	61 (21.5)
All causes	683 (656.4)	163 (275.9)	2,103 (1173.2)	1,362 (479.8)

[ ]: follow-up (person-years), ( ): mortality per 100,000 person-years.

Table 5. Effective Doses at Chest X-ray Examination for Adult Male

Modality	Settings	Tube current (mA)	Effective dose (mSv)	
Miniature photofluorography	Screening	3.9	0.07	ref 12)
SDCT	Screening	50	1.40	
SDCT	Clinical	100	2.74	
MDCT (4-lows)	Clinical	127	10.02	ref 13)
MDCT (16-lows)	Clinical	175	9.36	
MDCT (4-lows)	Screening	50	3.94	*
MDCT (16-lows)	Screening	50	2.74	

SDCT: single-detector computed radiography, MDCT: multi-detector computed radiography.

*: These effective doses were estimated from the data of MDCT in the clinical setting based on the advice of Dr Nishizawa.

5. CT 検診に伴う不利益

CT 検診に伴う不利益については，開始当初より次の三つのことが問題視されてきた．

①過剰な要精検率

今までの報告例によると要精検率は 2～25% と報告されており，従来の単純 X 線撮影の 2～4% に比べてはるかに大きく，またバラツキが大きい．たとえ癌発見率が 0.3% (10 万対 300) であっても，要精検率が 10% であれば，要精検者 100 人中 97 人は癌ではなかったことになり，この 97 人に対して無駄な精密検査と精神的ダメージを与えることになる．検診はあくまで無症状者を対象にするもので，有症状で病院を訪れる患者とは異なった対応が必要であり，要精検率はできうる限り低いものでないと運用できない．

②高いコスト

従来の単純 X 線検診は，極めて安価であり，1 件あたり 1,000～1,500 円程度にすぎなかった．しかし CT は精密検査機器として開発されたものであり，高機能高価格なものが中心であるため，一般的には 1 件あたり平均 8,200 円程度で運用されている．[8] このような高額では検査の普及を図ることは困難であり，検診に特化した低機能低価格機種の開発が必要である．

③放射線被曝

一般に，日本人の年間平均自然放射線被曝は 2.4 mSv，年間平均医療放射線被曝は 2.25 mSv とされている．[9] 従来，放射線の健康影響は 100 mSv 未満では疫学的に確認されていないものの，国際的には 100 mSv 未満であっても影響があるという立場 (linear non-threshold theory：LNT 仮説) が採用されている．最近出された日本の医療放射線被曝に警鐘を投げかける二つの報告を紹介する．一つは 2004 年に Lancet に掲載されたイギリスと 14 カ国の医療放射線被曝を比較した分析である．この論文によれば日本人は X 線検査を年間平均 1,000 人対 1,477 件受けていると推定されており，日本人の癌死亡の 3.2% が医療放射線被曝によるものと推定している．[10] また 2005 年に British Medical Journal に掲載された 15 カ国原子力発電所従事者のコホート研究によれば，原子力発電所従事者 1 人あたりの累積平均被曝線量は 19.4 mSv で，白血病を除く全癌死亡について，1 Sv あたりの過剰相対リスクは 0.97 (95% 信頼区間：0.14～1.97) で，統計学的有意に死亡リスクが上昇したと報告されている．[11] この二つの論文は，方法論上にいくつかの大きな問題があり，その結果については懐疑的な意見も多いが，従来，医療用放射線被曝に対して寛容であった我が国の医療全体に冷や水をかけるようなものであった．さて，CT 検診の被曝はどうであろうか？ Table 5 に男性を対象とした実効線量を示す．[12,13]

従来用いられてきた間接撮影法は 0.07 mSv と非常に低い線量であるが，低線量 CT はシングルディテクターで 1.40 mSv，マルチディテクターで 2.74～3.94 mSv と推定されている．精密検査としての高分解能 CT はおそらくシングルディテクターで約 3 mSv，マルチディテクターで 10 mSv 以上と推定される．線量をどこまで軽減できるか，高分解能 CT による follow up をどこまで減らすことができるかが，CT 検診にとって極めて大きな課題である．

6. まとめ

低線量 CT 検診の有効性には，いまだ症例研究程度の evidence しか存在せず，無症状者を対象とした"検診"としての運用・普及は時期尚早と言わざるを得ない．癌検診の有効性評価として evidence level の高い感度・特異度や死亡率減少効果等については，今後の報告を待たざ

るを得ない．一方不利益としての過剰な要精検率，高いコスト，高い放射線被曝についてもいまだ解決には至っていない．これらの問題を解決しない限り，現状では低線量CT検診を推奨することはできない．

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Original Article

Prostate-specific antigen, Gleason sum and clinical T stage for predicting the need for radionuclide bone scan for prostate cancer patients in Japan

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Abstract

Aim: In the present study, we evaluated the relationships between prostate-specific antigen (PSA) level and bone metastasis, between Gleason sum and bone metastasis, and between clinical T stage and bone metastasis in Japanese patients.

Methods: Between November 1998 and June 2004, we performed ultrasound-guided biopsies on 709 patients (mean age: 70.5 years, range: 39–90). Prostate cancer was detected in 339 patients (47.8%), 297 (87.6%) of whom underwent a radionuclide bone scan. In close collaboration with orthopedists, bone computed tomography scans, bone magnetic resonance imaging and/or plain rentogenograms were performed for cases that were difficult to diagnose as bone metastasis through radionuclide bone scans only.

Results: We detected 61 (20.6%) bone metastasis cases in 296 patients. A simple linear regression analysis between log[PSA] and bone metastasis ($n = 296$) produced a significant relationship ($P < 0.05$). When we set the cut-off PSA value for the indication for a bone scan at 15 ng/mL, the possibility of bone metastasis was 10%. However, from our experience, there was no bone metastasis in the patients whose Gleason sums were less than five, and in the patients whose Gleason sum were five or more, and the PSA levels were less than 15, there was no bone metastasis. The rate of bone metastasis increased with the increase of PSA level. In the clinical T_1–T_2 stage cases, there were significant higher PSA levels in the cases with bone metastasis. In the T_1–T_2 patients whose PSA levels were less than 16, there was no bone metastasis.

Conclusions: From the analysis of PSA, Gleason sum and clinical T stage, we suggest that bone scan is unnecessary for patients whose PSA level is less than 15 ng/mL or Gleason sum is less than five.

Key words prostate cancer, prostate-specific antigen, radionuclide bone scan.

Introduction

The American Urological Association Prostate Cancer Guidelines Panel stated that bone scanning '5 no longer be necessary' for newly diagnosed patients with prostate-specific antigen (PSA) of <10 ng/mL and no skeletal symptoms.[1] The National Comprehensive Cancer network recommend a bone scan for patients with clinical stage T_1 and T_2 disease only if their PSA is more than 10 ng/mL or their Gleason score is eight or more, and for all patients with clinical stage T_3 or T_4 disease, or with bone symptoms.[2] The Society of Surgical Oncology's surgical practice guidelines for prostate cancer recommend a bone scan for preoperative evaluation of patients only if their PSA is more than 8 ng/mL.[3] O'Dowd *et al.* extracted data from 142 articles in the Medline database and concluded that routine bone

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scanning is necessary for newly diagnosed asymptomatic patients only when the PSA level is 10 ng/mL or more.[4]

However, compared with the USA, the incidence and age-adjusted mortality rates for prostate cancer in Asian countries can be up to 10-fold lower.[5] In Asian immigrants in the USA, the prostate cancer rates tend to increase over time to approach levels seen in the native US population. It is thus not clear whether the established bone scanning indication guidelines, which are mainly based on data from Europe and the USA, are also applicable to Asian people.

In the present study, we evaluated the relationship between PSA level, Gleason sum, clinical T stage and bone metastasis. The results may become one of the useful tools for predicting the probability of bone metastasis and for determining the indication for bone nuclide scans for Asian people, especially Japanese.

Patients and methods

From November 1998 to June 2004, we performed four transition zone core biopsies, in addition to sextant systemic ultrasound-guided peripheral zone biopsies, on 709 patients (mean age: 70.5 years; range: 39–90). Prostate cancer was detected in 339 patients (47.8%), 297 (87.6%) of whom underwent radionuclide bone scan, regardless of their PSA levels, Gleason sum and clinical T stages. Characteristics of the patients are summarized in Table 1.

Table 1 Patient characteristics

Patient characteristic	mean, median (range)	*n*
Age (years)	72.5, 72 (45–90)	296
PSA (ng/mL)	325.1, 23.6 (0.5–12 288)	296
Gleason sum	6.7 (2–10)	238
Clinical T stage		296
T1		74
T2		134
T3		36
T4		52
With bone metastasis	61/296 (20.6%)	
PSA level	1365, 408 (16.6–12 288)	61
Gleason sum	7.5 (5–10)	48
Without bone metastasis	235/296 (79.4%)	
PSA level	55.1, 16.8 (0.5–2587)	235
Gleason sum	6.5 (2–10)	190

PSA, prostate-specific antigen.

Biopsy technique and prostate-specific antigen determination

Transrectal ultrasound-guided biopsies were performed in the sagital plane with a 7.0-MHz LPGIQ α-200 sector scanner (GE Yokogawa Medical Systems, Tokyo, Japan) fitted with a biopsy guide using an 18-gauge needle driven by a spring-loaded biopsy gun. Endorectal xylocaine gel was used for ultrasonography of the prostate gland and six systematic biopsies aimed at the peripheral zone were obtained from the left and right sides of the apex, the middle and the base of the prostate. We also obtained four additional biopsies aimed at the transition zone from the left and right sides of the apex and base of the prostate.[6] Total PSA serum concentrations were determined beforehand using the EIA method (Dai-Nippon, Osaka, Japan).

Radionuclide bone scan

Tc-99m methylene diphosphonate (MDP) radionuclide bone scans were performed soon after the pathological diagnosis of the prostate cancer. In close collaboration with orthopedists, bone computed tomography (CT) scans, bone magnetic resonance imaging (MRI) and/or plain X-P were performed for cases that were difficult to diagnose as bone metastasis through radionuclide bone scans only.

Statistics

The relationships between log[PSA] level and bone metastasis rate were assessed using a simple linear regression, and a correlation coefficient of $P < 0.05$ was considered as significant. One-way factorial ANOVA followed by Scheffe's F-test was used for comparisons of PSA level and Gleason sum between bone metastasis group and non-bone metastasis group in each clinical T stage. $P < 0.05$ was considered as significant.

Results

A total of 297 radionuclide bone scans were performed, but a final diagnosis of bone metastasis could not be reached in one case despite an additional bone CT scan, bone MRI and consultation with orthopedists. We therefore evaluated the relationship between PSA level and bone metastasis in 296 patients, 61 (20.6%) of whom bone metastasis was detected through radionuclide bone scans. The relationship between Gleason sum and bone metastasis was assessed in 238 patients.

Table 2 Relationship between PSA level and bone metastasis rate

PSA (ng/mL)	log[PSA]	Total number of patients	Number patients with bone metastasis (%)
0.0–2.9	0.00–0.49	2	0 (0)
3.0–9.9	0.50–0.99	67	0 (0)
10.0–29.9	1.00–1.49	96	3 (3.1)
30.0–99.9	1.50–1.99	57	9 (15.8)
100.0–299.0	2.00–2.49	32	12 (37.5)
300.0–999.0	2.50–2.99	21	18 (85.7)
1000.0–2999.0	3.00–3.49	14	12 (85.7)
3000.0–9999.0	3.50–3.99	6	6 (100)
>10 000.0	>4.00	1	1 (100)
Total		296	61 (20.6)

PSA, prostate-specific antigen.

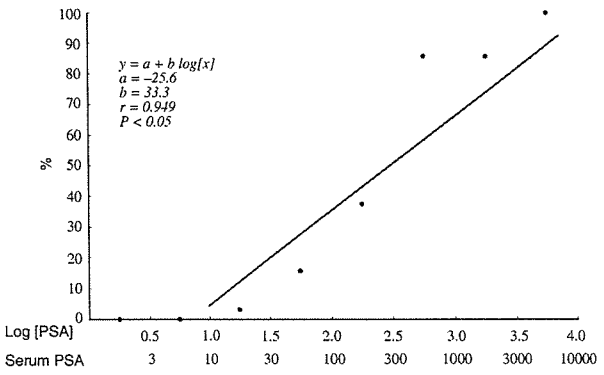

Fig. 1 Probability of bone metastasis rate compared with prostate-specific antigen values.

The results of a simple linear regression between log[PSA] level and bone metastasis are shown in Table 2 and Figure 1. The regression slope, regression intercept and correlation coefficient were 33.3, −25.6 and 0.949, respectively. The set of values showed a significant relationship ($P < 0.05$). When we set the cut-off PSA value at 15 ng/mL for the indication for a bone scan, the possibility of bone metastasis was 10% (Fig. 1). When we set the cut-off PSA value at 10 ng/mL, the possibility of bone metastasis was 5% (Fig. 1).

There was no bone metastasis in the patients whose Gleason sums were less than five. In the patients whose Gleason sum were five or more, and the PSA levels were less than 15, there was no bone metastasis, however, the rate of bone metastasis increased with the increase in PSA levels (Table 3).

In the patients whose clinical stages were T_1–T_2, there were significantly higher PSA levels in the cases with bone metastasis. In the T_1–T_2 patients whose PSA levels were less than 16, there was no bone metastasis. The Gleason sum was higher in the T_1–T_2 cases with bone metastasis, however, the difference was not significant.

Discussion

Chybowski *et al.* studied 521 randomly selected patients in a retrospective study.[7] These patients, ranging from 44 to 92 years of age with a mean age of 70 years, all had untreated prostate cancer. All patients were given a digital rectal examination to establish the clinical stage and underwent prostate biopsy or transurethral resection of the prostate to establish the tumor grade. In addition, serum acid phosphatase, prostatic acid phosphatase (PAP) and PSA were measured, and a radionuclide bone scan was administered. The investigators then examined these factors for correlation with the bone scan results. Local clinical stage, tumor grade, acid phosphatase, PAP and PSA all correlated positively with the incidence of a positive bone scan, each with a coefficient of $P < 0.0001$. They found that PSA was the best for predicting the results of a radionuclide bone scan when receiver operating characteristic curves were used. They concluded that radionuclide bone scans are unnecessary for the staging of previously untreated prostate cancer patients who have no skeletal symptoms and a serum PSA value of less than or equal to 10 ng/mL. Pantelides *et al.* also attempted to determine the level of serum PSA that would predict osseous metastasis.[8] Fifty histologically confirmed but untreated prostate cancer patients were carefully monitored with bone scans during a long-term follow up. They noted that a serum PSA level of more than 58 ng/mL yielded a 79% positive predictive accuracy for detecting skeletal disease, and proposed that untreated prostate cancer patients with such a PSA level should undergo radionuclide bone

Table 3 Relationship between PSA level/Gleason sum and bone metastasis rate

PSA (ng/mL)	log[PSA]	GS 5		GS 6		GS 7		GS 8<	
		Total number of patients	Number of patients with bone metastasis (%)	Total number of patients	Number of patients with bone metastasis (%)	Total number of patients	Number of patients with bone metastasis (%)	Total number of patients	Number of patients with bone metastasis (%)
0.0–2.9	–0.49	1	0 (0.0%)	0	0 (0.0%)	1	0 (0.0%)	0	0 (0.0%)
3.0–9.9	0.50–0.99	6	0 (0.0%)	29	0 (0.0%)	10	0 (0.0%)	4	0 (0.0%)
10.0–29.9	1.00–1.49	15	0 (0.0%)	25	1 (4.0%)	16	0 (0.0%)	15	1 (6.7%)
30.0–99.9	1.50–1.99	6	1 (16.7%)	6	1 (16.7%)	21	3 (14.3%)	14	3 (21.4%)
100.0–299.0	2.00–2.49	3	1 (33.3%)	2	2 (100.0%)	8	3 (37.5%)	12	5 (41.7%)
>300.0	>2.50	2	1 (50.0%)	2	2 (100.0%)	14	14 (100.0%)	13	10 (76.9%)
Total		33	3	64	6	70	20	58	19

GS, Gleason sum; PSA, prostate-specific antigen.

imaging. However, in some cases in the present study, we detected bone metastasis in patients with low-level PSA and high-level Gleason sum.

The National Comprehensive Cancer network guidelines include the pathological tumor grade (Gleason score) as an indication for a radionuclide bone scan.[2] In the present study, we examined the relationship between PSA level, Gleason sum, clinical T stage and the incidence of bone metastasis. Our results indicate that PSA level is closely related to bone metastasis rates, and that there was no bone metastasis in the patients whose Gleason sums were less than five. In the patients whose Gleason sum was five or more, and the PSA levels were less than 15, there was no bone metastasis; however, the rate of bone metastasis increased with the increase in PSA levels. In the T_1–T_2 patients whose PSA levels were less than 16, there was no bone metastasis. The Gleason sum was higher in the T_1–T_2 cases with bone metastasis; however, the difference was not significant. There may be a significant difference if we increased the number of patients studied.

In a multicenter retrospective study, Kosuda *et al.* reported on PSA levels and the need for bone scans in Japan.[9] From the analysis of 1294 patients, they suggested that baseline bone scan should be eliminated in patients with newly diagnosed prostate carcinoma in Japan who have serum PSA levels of <10 ng/mL, and baseline bone scans can be omitted for patients with a Gleason grade of <2 tumors, or with a Gleason score of <6. Their reports were very informative; however, the PSA kits, pathologist, radiologist and orthopedist were not so well standardized because of the multicenter study. The present study was carried out in the one hospital, so we were only able to analyse 296 bone scan cases, but the levels of diagnosis were standardized. From the analysis of PSA, Gleason sum and clinical T stage, we conclude that bone scan may not be necessary for patients whose PSA level is less than 15 ng/mL (the possibility of bone metastasis is 10% from the simple linear regression analysis) or Gleason sum is less than five.

The results of the present study may also be useful for determining the indication for a bone scan, and to explain the probability of bone metastasis to prostate cancer patients in Japan and other Asian countries.

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CASE REPORT

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Osamu Nishizawa

Recurrent retroperitoneal malignant nerve sheath tumor associated with neurofibromatosis type 1 responding to carboplatin and etoposide combined chemotherapy

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Abstract A 25-year-old man was referred to our hospital with left flank pain, and computed tomography (CT) and magnetic resonance imaging (MRI) revealed large retroperitoneal masses. Physical examination revealed many café-au-lait spots and superficial neurofibromas, and a diagnosis of neurofibromatosis type 1 (von Recklinghausen's disease) was made. The tumor was resected, and the pathological diagnosis was malignant peripheral nerve sheath tumor (MPNST). Six months after the operation, lung metastases were detected. Surgical resection was incomplete, as there were too many lesions. He received four courses of chemotherapy with carboplatin and etoposide, and the metastatic lung lesions were markedly decreased. After chemotherapy, complete resection of the remaining lung lesions was performed, and there has been no recurrence to date.

Key words MPNST · Neurofibromatosis type 1 · Retroperitoneal tumor · Chemotherapy

Introduction

Malignant peripheral nerve sheath tumor (MPNST) accounts for about 10% of malignant soft-tissue neoplasms, 40%–60% of which are associated with neurofibromatosis type 1 (NF1).[1] In addition, retroperitoneal primary MPNST accounts for 1%–3% of retroperitoneal tumors. Radical and complete surgical excision is the only curative treatment, and radiotherapy and chemotherapy are considered ineffective. The prognosis of MPNST complicated with NF type 1 is very poor.

In patients with metastatic and recurrent disease, no suitable treatment methods are available, except for chemotherapy. However, there have been few previous reports of effective chemotherapeutic regimens. We report here a patient whose disease responded to carboplatin and etoposide combined chemotherapy (CE therapy), and who showed complete remission after salvage surgery.

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Case report

A 25-year-old man consulted a local medical doctor complaining of left flank pain, which had developed gradually from April 2003. He was found to have a large left retroperitoneal tumor by computed tomography (CT) and magnetic resonance imaging (MRI), and was referred to our hospital on May 12 for treatment.

Physical examination revealed many café-au-lait spots and superficial neurofibromas on the trunk and extremities, and he was diagnosed as having neurofibromatosis type 1 (NF 1; von Recklinghausen disease). CT and MRI revealed two left retroperitoneal tumors (Fig. 1a,b). There were no abnormal data on blood chemistry and hormonal analysis. Metaiodobenzylguanidine (MIBG) scintigram showed no accumulation. There were no metastatic lesions.

Surgical excision of the tumors was performed on May 27. The pathological diagnosis of the large tumor was malignant peripheral nerve sheath tumor (MPNST), and the small tumor was a neurofibroma. The main tumor was grayish-white in color and necrotic in the central part on gross appearance. Pathologically, it consisted of short spindle cells and was necrotic in its center (Fig. 2a). The histological grade of the tumor was G3 (poorly differentiated), and its subtype was conventional MPNST, according to the WHO classification.[2] Immunohistochemical analysis revealed the tumor cells to be positive for S-100 protein, vimentin, and MIB-1, and negative for smooth muscle actin (SMA) and c-kit. We speculated that the main tumor was the result of malignant transformation of the neurofibroma, which had originated from the nerve roots of T11-L3. After adjuvant irradiation (total, 50.4 Gy) of the remaining nerve roots of T11-12, the patient was discharged, on August 8, 2003.

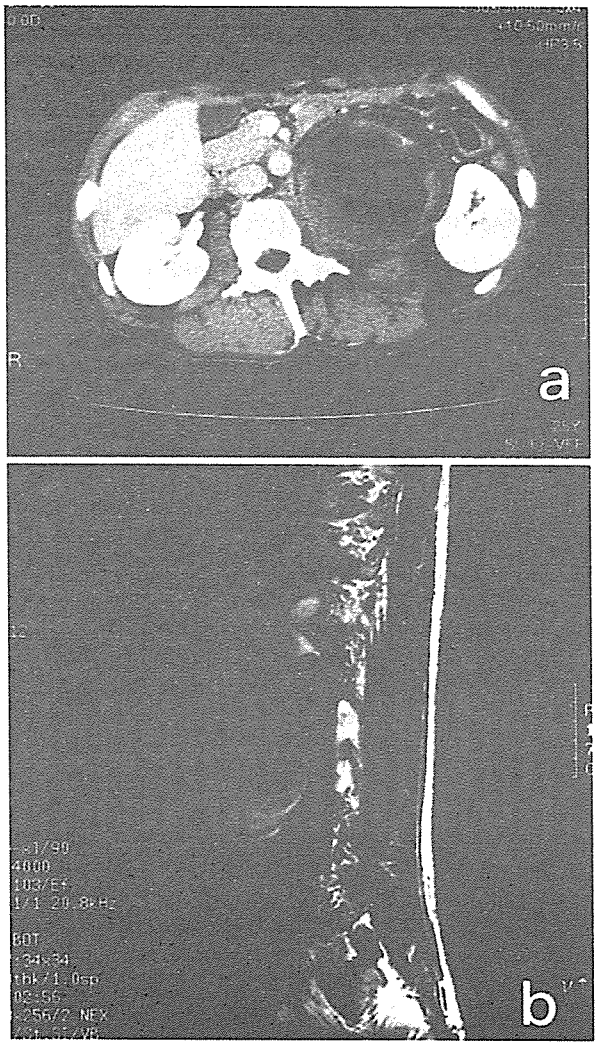

Fig. 1a,b. Computed tomography (CT) and magnetic resonance imaging (MRI) findings of the retroperitoneal tumors. **a** CT revealed two left retroperitoneal tumors – a large tumor about 11 × 9 cm in diameter that compressed the left kidney upward, and a small tumor of about 7 × 4 cm adjacent to the psoas muscle. **b** The main tumor was encapsulated and showed heterogeneous and high-intensity signals on T2-weighted MR images

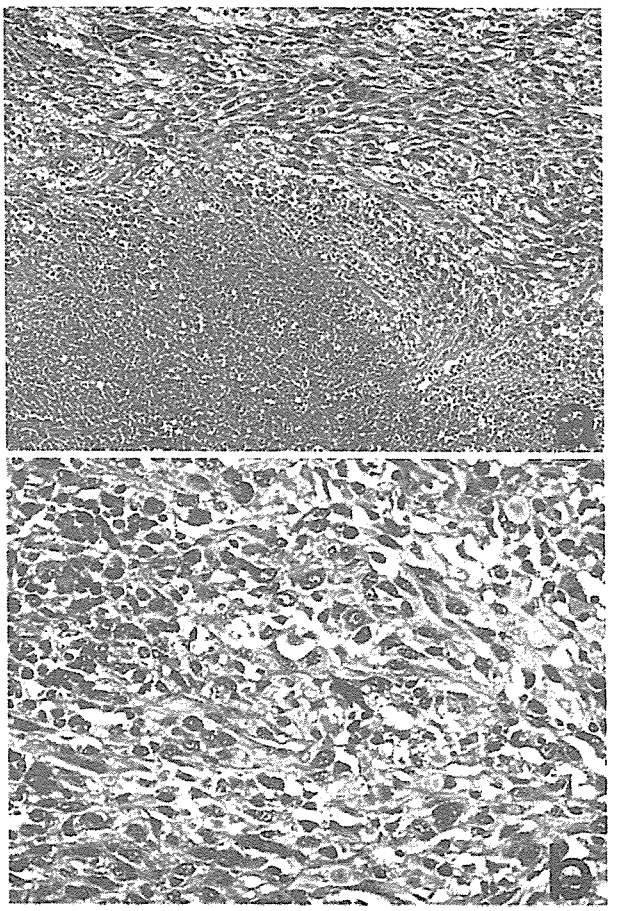

Fig. 2a,b. Pathological findings of the main tumor. **a** The main tumor consisted of short spindle cells and was necrotic in its center. **b** The tumor cells had bizarre nuclei and some showed mitosis. **a** H&E, ×200; **b** H&E, ×400

Bilateral pulmonary metastases occurred in December of the same year during follow-up. Surgical excision of the right pulmonary metastatic lesions was performed in January 2004, but the surgical margin was positive and many micrometastases were found. Planned resection of the lesions on the left side was abandoned. The patient received adjuvant chemotherapy (CE therapy; carboplatin at 150 mg/m^2, days 1–4, and etoposide at 150 mg/m^2, days 1–4; repeated every 4 weeks). After four courses of the chemotherapy, the metastatic lesions were markedly reduced (Fig. 3b). Additional surgical excision of the superior lobe of the left lung was performed in June 2004. Pathological findings revealed viable tumors, which consisted of atypical spindle cells and pleomorphic cells compatible with the primary tumor, but the margin was negative. A positron emission tomography (PET) scan showed no accumulation. During an additional two courses of chemotherapy, severe neutropenia (WHO grade 4) and thrombocytopenia (WHO grade 4) occurred, but recovery was achieved by the use of granulocyte colony-stimulating factor (G-CSF), platelet transfusion, and peripheral blood stem cell transfusion (PBSCT), with no infectious complications or bleeding symptoms. The patient was discharged on September 19, 2004. There has been no recurrence since the last surgery.

Discussion

NF 1 (von Recklinghausen's disease) is a disease with an autosomal dominant inheritance pattern, characterized by multiple café-au-lait spots and neurofibromas. The incidence of NF1 is about 1 in 3000 to 1 in 4000 at birth, but half are thought to be sporadic cases. The *NF 1* gene

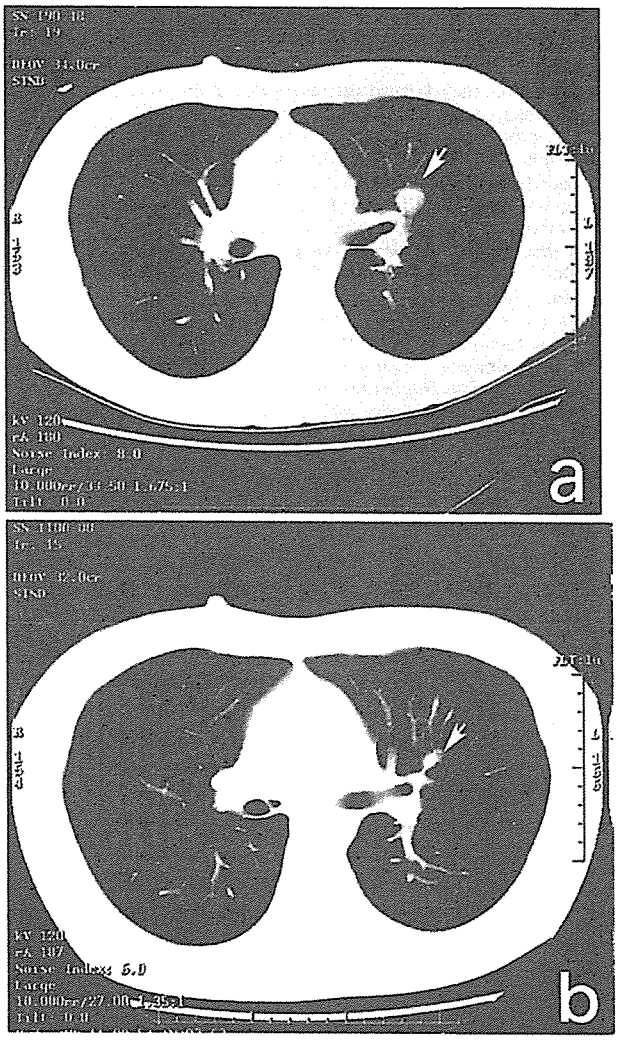

Fig. 3a,b. CT of the chest. **a** Left lung metastasis before chemotherapy. **b** The metastatic lesions were reduced after four courses of chemotherapy

was mapped to chromosome 17q11-2, and encodes neurofibromin, which acts as a tumor suppressor. Inactivation of the gene leads to subsequent tumor development.[3] NF 1 is associated with several complications, such as optic nerve gliomas, pheochromocytomas, vascular diseases, and malignant neoplasms.[3,4]

MPNST is a malignant tumor arising from the peripheral nerves. There are three types of MPNST, classified according to the origin of the disease: (1) primary MPNST, which arises de novo, (2) secondary MPNST, which arises as a result of malignant transformation of neurofibromas, and (3) MPNST, associated with NF 1.[5]

MPNST accounts for about 10% of malignant soft-tissue neoplasms, 40%–60% of which are associated with NF type 1. On the other hand, about 4% of NF 1 cases are associated with MPNST. In addition, retroperitoneal primary MPNST accounts for 1%–3% of retroperitoneal malignancies. MPNSTs occur in the extremities, head and neck region, and deep soft tissues close to the nerve trunks. The symptoms and signs of the tumor are pain, growth of the mass, and neurological deficits occurring in association with nerve involvement by the tumor.[1]

CT and MRI are useful to evaluate tumor size and location, and relationships to adjacent organs. On MRI, the tumors tend to present high-intensity signals and nonuniform internal patterns on T2-weighted images. The final diagnosis is made by pathological examination. Malignant cases show mitoses and atypical nuclei within tumor cells and some hemorrhagic or necrotic tissues, in addition to whorling or palisading patterns of spindle cells. The tumors are often positive for S-100 protein, vimentin, and MIB-1 protein on immunohistochemical analyses.[1]

Radical and complete surgical excision is the best and only curative method of treatment available for MPNST, while radiotherapy and chemotherapy are considered ineffective. Therefore, early diagnosis and prompt surgical operation are important for MPNST. However, detection of the tumor is frequently delayed because clinical manifestations are often seen only after rapid growth of the tumor, especially in deep portions of the trunk, such as the retroperitoneum. The local recurrence rate after resection of the tumor is about 50%, and the 5-year survival rates are about 50% and 10%–30% in patients with and without NF 1, respectively. The prognosis of MPNST of retroperitoneal origin is very poor.[1,6]

In patients with metastatic and recurrent disease, adjuvant therapy is required. Doxorubicin- and/or ifosfamide-based chemotherapy (for example, CYVADIC therapy, which includes cyclophosphamide, vincristine, adriamycin, and dacarbazine; or MAID therapy, which includes mesna, adriamycin, ifosfamide, and dacarbazine) have been used for the treatment of adult soft-tissue sarcoma, but such regimens have not shown significant effectiveness for MPNST.[7] There have been recent reports of cases that have responded to new chemotherapeutic regimens. Steins et al.[8] reported the successful treatment of two patients with carboplatin and etoposide combined chemotherapy (CE therapy), with disease refractory to doxorubicin and ifosfamide, and Gallo et al.[9] reported the successful use of ifosfamide, vincristine, and doxorubicin combined chemotherapy (IVA-2 protocol). The necessity for the prevention of local recurrence by postoperative high-dose irradiation, at doses over 60 Gy, has also been reported.[6]

In the present patient, lung metastases developed postoperatively, but they responded to chemotherapy (CE therapy), and the patient obtained complete remission after surgery. The major toxicity of this chemotherapy was hematological, which was manageable by the methods described above. Although further clinical evaluation of its efficacy is needed, CE therapy may represent a valid regimen of neoadjuvant therapy for metastatic MPNSTs.

In conclusion, close follow-up is essential from childhood in patients with NF1 because of the malignant potential of this disease. Genetic counseling, including family members, is also important. For the treatment of recurrent MPNST, multidisciplinary therapy consisting of radiation and chemotherapy should be considered.

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資　料

資料編

目次

がん診療の経済的な負担に関するアンケート調査

平成 16 年度　厚生労働科学研究費補助金
第 3 次対がん総合戦略研究事業

「がん医療経済と患者負担最小化に関する研究」
主任研究者：濃沼　信夫（東北大学教授）

＜調査の趣旨＞

このアンケートは、がん診療を受けておられる患者さんの経済的な負担を把握するためのものです。

質が高く安全で、患者さんの経済的な負担ができるだけ少ない、優れたがん医療の実践に向けた基礎資料を得ることを目的としています。

＜お願い＞

このアンケートは、がん診療で外来を受診されている全国の患者さんを対象にしております。

日数や金額などをおたずねする項目では、過去の領収書などを参考にしながらお答え下さい。正確にわからない場合は、おおよそで結構です。

お名前を書いていただく必要はありません。ご回答は統計的に処理されますので、個人が特定されることはありません。

まことに恐れ入りますが、ご回答いただいた調査票は1週間程度で、ご返送下さい。返信用の封筒に切手はいりません。何とぞ、よろしくお願い申し上げます。

＜お問い合わせ先＞

〒980-8575　仙台市青葉区星陵町 2-1
東北大学大学院　医学系研究科　医療管理学分野

伊藤道哉、丁 漢昇、金子さゆり、中村利仁
TEL:022-717-8128　FAX:022-717-8130

記入日	月　日

1 通院・入院について

1-1 自宅から病院までの交通手段について、あてはまるものを○で囲んで下さい。

徒歩	電車	自家用車	飛行機
バス	新幹線	タクシー	その他（　　）

1-2 通院時間は片道どのくらいですか。

時間	分くらい

1-3 通院にかかる交通費（宿泊費を含む）は、往復でいくらですか。

ご自身	円くらい	つきそいの方	円くらい

1-4 通院回数はどのくらいですか。

1ヶ月間に	回くらい	1年間に	回くらい

1-5 いまの病気（がん）で、これまで何ヶ所の病院・診療所（現在受診中も含む）を受診しましたか。

ヶ所

1-6 いまの病気（がん）で、これまで何回入院しましたか。

回

1-7 昨年1年間（1月1日～12月31日）の入院期間は、合計しておよそ何日でしたか。

日

2 いまの病気（がん）によって、ご自身の仕事にどのような影響がありましたか。あてはまるものに○をつけて下さい。

1 お勤めの方
2 自営業の方
3 お勤め・自営業以外の方

→

1 専業主婦
2 学生
3 無職
4 その他（　　）

お勤めの方	自営業の方
1 特に影響はない	1 特に影響はない
2 これまでのように仕事をこなすことができない	2 これまでのように仕事をこなすことができない
3 仕事を休むことが多くなった	3 仕事を休むことが多くなった
4 仕事をやめた・解雇された	4 休業・廃業した
5 勤務時間が減った	5 営業時間が短くなった
6 給料が減った	6 収入が減った
7 異動・配置換えとなった	7 転業した
8 その他（　　）	8 その他（　　）

3 いまの病気（がん）によって、経済的にどのような影響を受けましたか。

1 変らない
2 ご自身の支出が増えた → 約（　　）割の増加
3 ご家族の支出が増えた → 約（　　）割の増加
4 ご自身の収入が減った → 約（　　）割の減少
5 ご家族の収入が減った → 約（　　）割の減少
6 その他（　　）

4 いまの病気(がん)に関する支出について

4-1 病院や薬局の窓口で支払った金額はいくらですか。

	入院分	外来分
先月1ヶ月間	円	円
昨年1年間	円	円

4-2 健康食品や民間療法などの支出額はいくらですか。

先月1ヶ月間	円	昨年1年間	円

4-3 その他の支出額(贈答費・かつら代など)はいくらですか。

先月1ヶ月間	円	昨年1年間	円

4-4 民間保険・簡易保険・県民共済などの保険料はいくらですか。

先月1ヶ月間	円	昨年1年間	円

5 いまの病気(がん)の給付について

5-1 高額療養費として、戻ってきた金額はいくらですか。

昨年1年間	円

5-2 医療費還付として、戻ってきた税金はいくらですか。

昨年1年間	円

5-3 民間保険・簡易保険・県民共済などから受け取った金額(入院給付金など)はいくらですか。

先月1ヶ月間	円	昨年1年間	円

6 いまの病気(がん)の経済的負担について、病院から説明がありましたか。○をつけて下さい。

1 十分な説明を受けた
2 説明を受けたがわからなかった
3 説明はなかった
4 覚えていない

→ 説明した人を○で囲んで下さい。

医師　看護師　その他の職員(　　)

7 いまの病気(がん)の経済的負担について、病院以外の情報源は何ですか。

1 雑誌・本
2 新聞
3 テレビ・ラジオ
4 インターネット
5 講演会
6 相談窓口
7 患者団体
8 保険外交員
9 家族・親戚
10 友人・知人
11 その他(　　)

8 いまの病気(がん)の経済的負担について、外部の人に相談しましたか。

1 相談した → 相談先
2 相談していない → その理由

相談先:
1 病院の相談窓口
2 役所の相談窓口
3 地域の世話人(民生委員など)
4 民間団体(NPOなど)
5 同じ病気の人
6 その他(　　)

その理由:
1 相談しなくてもよい
2 相談したくない
3 相談したいができなかった

続く

9 いまの病気(がん)の経済的負担について、特に希望するものを3つまで(その他を含む)選び○をつけて下さい。

1 もっと情報がほしい
2 気軽に相談できるところがほしい
3 自宅の近くに、がん専門病院があってほしい
4 自己負担が多くなっても(保険適用外でも)、がん診療を続けたい
5 もし選べるなら、経済的負担の少ない治療(お薬)にしてもらいたい
6 がん診療の自己負担は、他の病気より軽くしてほしい
7 がん診療での特定療養費制度(室料差額など)の対象をひろげてもらいたい。
8 高額療養費の限度額を引き下げてもらいたい
9 がん診療は全額公費負担にしてもらいたい
10 外国でがん診療を受けた場合も、公的保険を適用してもらいたい
11 民間保険の内容・給付額を充実してもらいたい
12 その他

(　　)

10 ご自身について

10-1

年齢	歳	性別	男　女	居住地	都道府県

10-2 いまの病気(がん)と診断されたのは

平成　　年　　月頃	あるいは	年前

10-3 がんと診断されたとき、それはどの部位でしたか(複数の場合は主たる部位)。○で囲んで下さい。

食道	胃	結腸	直腸	肝臓	胆管	すい臓		
肺	胸膜	乳房	子宮	卵巣	膀胱	腎臓	前立腺	精巣
血液	脳	いん頭	こう頭	舌	口腔	甲状腺		
骨	筋肉	リンパ腫	皮膚	その他 (　　)				

10-4 いまの病気(がん)の治療状況について、1つに○をつけて下さい。

1 がんに対する治療を継続中
2 がんに対する治療は終了し、検査などで通院中
3 その他(　　)

10-5 いままで受けた治療、すべてに○をつけて下さい。

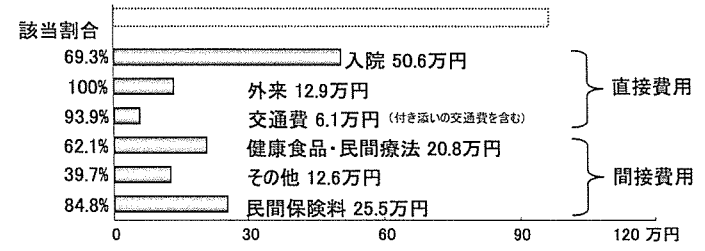
1 外科手術(内視鏡手術を含む)
2 薬物療法(抗がん剤など)
3 内分泌療法(ホルモン剤など)
4 放射線療法
5 緩和ケア
6 在宅ケア
7 リハビリテーション
8 ストーマケア(人工肛門など)
9 その他(　　)

ご協力、どうもありがとうございました。

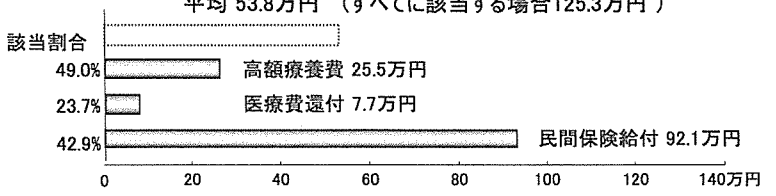
がん治療の自己負担額と償還額・給付額（年間）

n= 4,174（平均63.2歳）

■自己負担額　平均 93.2万円　（すべてに該当する場合128.5万円 ）



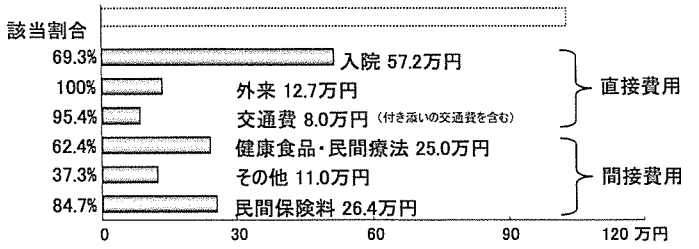
■償還額・給付額　平均 53.8万円　（すべてに該当する場合125.3万円 ）



肺がん治療の自己負担額と償還額・給付額（年間）

n= 325（平均66.3歳）

■自己負担額　平均 102.0万円　（すべてに該当する場合140.3万円 ）



■償還額・給付額　平均 63.5万円　（すべてに該当する場合139.9万円 ）