# [症例報告]A Case of Paraneoplastic Cerebellar Degeneration in Small Cell Lung Cancer : Autopsy Findings after Chemoradiotherapy

# A Case of Paraneoplastic Cerebellar Degeneration in Small Cell Lung Cancer: Autopsy Findings after Chemoradiotherapy

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## ABSTRACT

The patient was a 62-year-old man with small cell lung cancer(SCLC). Symptoms such as dizziness, ataxia and double vision developed in the course of preoperative chemotherapy of cisplatin and VP-16. Despite the chemoradiotherapy, disabling cerebellar dysfunction developed rapidly, and operation was canceled due to poor performance status. The patient died 6 weeks after onset of the symptoms. Diagnosis of paraneoplastic cerebellar degeneration (PCD) was confirmed by autopsy which revealed a decreased number, not total loss, and degeneration of Purkinje cells in the cerebellum. Surgery could have been carried out had it not been for the cerebellar dysfunction since the cancer was at an early stage and the loss of Purkinje cells was not complete. *Ryukyu Med. J., 14(3)209～211, 1994*

Key words : paraneoplastic cerebellar degeneration, paraneoplastic syndrome, small cell lung cancer.

## INTRODUCTION

Paraneoplastic cerebellar degeneration (PCD) is paraneoplastic syndrome in which diffuse atrophy of the cerebellum and associated spinocerebellar tracts and systems occurs as a remote effect of the neoplasm[1].

Paraneoplastic syndromes may mimic metastatic disease and, unless detected, lead to inappropriate palliative, rather than curative, treatment[2]. We present patient with PCD secondary to small cell lung cancer (SCLC) of the lung, whose disease progressed in spite of an intensive chemoradiotherapy.

## CASE REPORT

In October 1988, a 62-year old man was admitted to the National Kyushu Cancer Center because of an abnormal mass on an X-ray film of the chest. There was no history of previous illness. He was a heavy smoker. At the time of admission, he had no symptoms, and no abnormalities were found on physical examination. Neurological examination was normal. The chest X-ray showed a 2.5×2.2 cm density in the left middle lung field. Trans bronchial lung biopsy revealed oat cell type SCLC. Results of hematologic studies and blood chemistry were normal. A computed-tomographic(CT) scan showed a soft density mass in the lung, but no mediastinal lymph node swelling. A CT scan of the brain, abdomen and ultrasound echography of abdomen revealed no metastatic lesions. A radioisotopic scan of the bones was negative. Cytology of bone marrow was also negative. The clinical stage was considered to be cT1N0M0 (SCLC, performance status was 0). We planned the preoperative chemotherapy regimen. On November 16, the patient received the first cycle of chemotherapy with cisplatin (100mg/㎡) and VP-16 (100mg/㎡). Vomiting, due to toxicity, was moderate (grade 3). The lung tumor reduced 68% in size. We planned to operate on December 20, but some symptoms such as pain and dullness of the left upper and lower extremities and hypesthesia of the trunk developed around the middle of December. In order to rule out the possibility that the new symptom were related to a metastatic lesion, the operation was postponed, and further examinations were carried out. Complete physical examination by a neurophysician

suggested that the symptoms were due to cervical neuroradiculopathy. The CT scan of the brain was also negative. On December 26, a second cycle of chemotherapy using the same regimen was administered. Although the symptoms disappeared slowly, from January 7, dizziness, ataxia and double vision developed and the patient was confined to bed due to progressive disabling cerebellar dysfunction. CT and Magnetic Resonance Imaging of the brain were normal and cytology of the cerebrospinal fluid was negative. From the results of examinations, those symptoms were considered as PCD. As the patient's physical condition was poor, we thought that he would not tolerate surgery and should be given a course of radiotherapy instead. However, before the completion of the therapy, he developed dysarthria, dysphagia and hyponatremia and died due to acute respiratory failure on February 16.

Autopsy revealed no metastases or bleeding in the cerebellum or brain stem, and histology disclosed a decreased number and degeneration of the Purkinje cells of the cerebellum, but these were not complete (Fig. 1). The lung tumor (16mm×15mm) showed central necrosis and degeneration of the nuclei of many cancer cells. There were no abnormalities in other organs. These findings supported PCD.

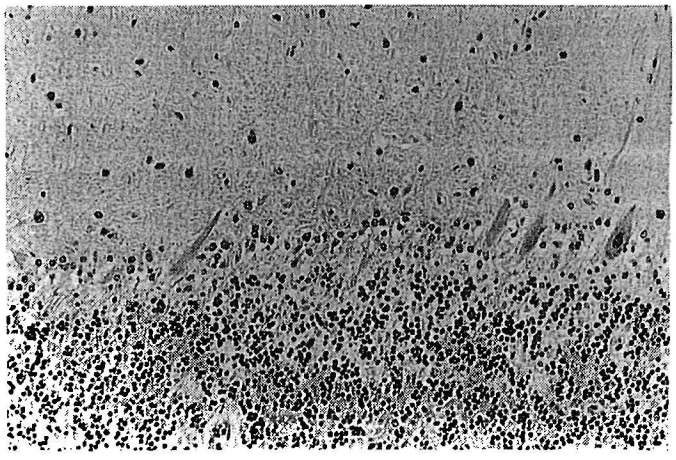

Fig.1 Autopsy specimen (cerebellum) revealed decreased number and degeneration of the Purkinje cells, but these were not lost completely. (H&E stain)

## DISCUSSION

Some remissions of PCD have been reported after plasmapheresis or radical operation. Cocconi *et al.*[3] reported a case of PCD secondary to ovarian carcinoma which showed quick partial improvement after plasmapheresis. Paone *et al.*[1] reported a patient with PCD secondary to bronchogenic carcinoma whose symptoms disappeared after radical pneumonectomy. The latter case demonstrated the ability of the brain to recover from acute carcinomatous cerebellar dysfunction, continuing for more than 6 weeks if the neoplasm is removed. Tsukamoto *et al.*[4] reported a patient with PCD who suffered from severe ataxia in spite of removal of breast cancer. This operation was performed 3 months after the onset of ataxia. Taniguchi *et al.*[5] reported a PCD case with SCLC whose symptomatic improvement occurred only one week after pulmonary resection. Their case was, however, advanced stage(pT3N2M0).

We think that cervical radiculoneuropathy might be a part of PCD, and not a separate entity, because the symptoms mentioned previously, improved after the first course of chemotherapy. A post-mortem examination revealed central necrosis of the lung tumor and degeneration of many cancer cells. This proves that the tumor is partially sensitive to chemoradiotherapy, but is not curative. In our department, 5 years survival rate of resected stage I SCLC patients was 61.4%[6] and there was no operative mortality. On the other hand, 5 year survival rate of nonresected stage I and II group who achieved complete remission by radiochemotherapy was 33.3%[6]. We believe that we might not have hesitated to operate because some Purkinje cells were found in the cerebellum at autopsy, the clinical course of this case was 5-8 weeks and the clinical stage was early.

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