Unusual association of diseases/symptoms

Intraventricular metastases from small cell carcinoma of the lung

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Summary

Small cell lung carcinoma (SCLC) represents 15–20% of all lung cancers. It is characterised by rapid growth and early metastatic dissemination. Generally, the prognosis of these patients is poor. When brain metastases develop, the prognosis is even poorer. Most of these cases present parenchymal metastases; however, intraventricular dissemination may also occur although it is very uncommon. To our knowledge the case reported here is the first showing multiple synchronic intraventricular dissemination from SCLC.

BACKGROUND

Small cell lung carcinoma (SCLC) is a very chemosensitive disease with high rate of rapid responses. However, its prognosis is poor due to its tendency to early relapses. Dissemination to the brain is frequent and fatal. Parenchymal metastases are the commonest but intraventricular lesions might also appear. All the treatable cases will receive palliative therapy.

There are several cases reported scientific journals which describe intraventricular metastases but none of them from SCLC.

We present here the case of a man diagnosed with SCLC who developed intraventricular metastases with a very aggressive clinical course.

CASE PRESENTATION

A 75-year-old man, heavy smoker, with a history of hypertension, diabetes and chronic bronchitis for more than 35 years (two packs of cigarettes a day) had right pleuritic pain with fever, cough and weight loss of 8 kg in 2 months.

CT scan performed in December 2009 showed a 5 cm mass behind the right pulmonary hilum which partially covered the lower lobe bronchus and caused middle lobe atelectasis. CT scan also showed several mediastinal pathological adenopathies.

A bronchoscopy was performed and a biopsy was taken. The histopathological analyses confirmed SCLC. The extension investigation showed no other lesions.

The patient received four cycles of chemotherapy with the combination of carboplatin and etoposide followed by thoracic radiotherapy and prophylactic cranial radiation. This treatment was finished in March 2010 and reevaluation by CT scan showed good partial response.

In June 2011, the patient had dry cough and dyspnoea on moderate efforts. The chest x-ray showed a growth of the right mass and mediastinal adenopathies. Serum levels of enolase and Pro-GRP were increased (five and ten times higher than normal levels, respectively). The patient was treated with the same schedule of chemotherapy for four cycles. The reevaluation showed good partial response again and normal levels of tumour markers.

Since September 2011 the patient was regularly monitored. In November, he started to feel tiredness and had cough and fever. The chest x-ray and blood analyses did not show progressive disease or any sign of infection. Anyway, he was treated with a wide-spectrum antibiotic for 10 days. Symptoms disappeared after the 4th day on antibiotic. One week after the antibiotic was finished his family noticed a progressive change in his behaviour with nervousness, tremor, temporo-spatial disorientation, psychomotor agitation without any focal neurologic deficit.

An analysis was performed and showed normal levels of ProGRP and enolase.

Figure 1 Intraventricular metastases located in the occipital horn with contrast enhancement and small solitary right frontal lobe metastasis. Transependymary invasion.

Figure 2 Metastases in frontal, temporal and occipital horns with other smaller lesions affecting intraventricular wall and transependymal extension.

INVESTIGATIONS

A central nervous system CT scan was also performed. It showed multiple lesions affecting brain parenchyma (frontal lobe) and intraventricular system without hydrocephalus (figures 1–4). The biggest lesion affected the right occipital horn (6×2.7×3.9 cm). This lesion associated mild oedema and extended to the atrium of the right ventricle and it showed heterogeneous contrast enhancement. There were other similar lesions located in frontal and temporal horns and also multiple nodules in the ventricular wall.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis should be made with primary ventricular tumours.

TREATMENT AND OUTCOME AND FOLLOW-UP

High doses of steroids were started but his mental status got worse as well as it appeared psychomotor agitation. The patient died 3 days after without any chance of other treatments.

DISCUSSION

SCLC represents 15–20% of all lung cancers.¹ It is considered a different clinical entity which is characterised by rapid growth and early metastatic dissemination. Systemic chemotherapy, with or without radiotherapy, is accepted as the cornerstone of therapy. This disease is the paradigm of a very chemo-sensitive tumour with high rate of rapid responses. However, due to its tendency to relapse, its prognosis is very poor. In fact SCLC is considered the most aggressive lung cancer.^{2 3}

Generally, dissemination to the brain is frequent and fatal. These patients will not have any chance of radical therapy⁴ and most of them will survive only 1 month or less without any treatment.^{4 5}

Figure 3 Right frontal and occipital lesions.

Parenchymal metastases are more common than intraventricular dissemination. In general, intraventricular spread from epithelial malignancies occur in less than 5% of cancer patients such as kidney, breast, gastric, pituitary, thyroid or bladder carcinomas, lung or colon adenocarcinomas, lymphomas and melanomas,⁵ however, to our knowledge this is the first case reporting intraventricular metastases from SCLC.

Patients with intraventricular metastases from any origin are rarely candidates to radical therapy. Hassaneen *et al*⁶ reported their experience with 29 patients treated by surgery at a single institution. All these patients presented several neurological complications being speech and motor deficits the most common. Only 17% presented altered mental status and 24% were asymptomatic.

These authors achieved an overall median survival time from the date of surgery of 11.7 months with an estimate of cumulative survival of 37% at 2 years.⁵ The univariate analysis determined that preoperative Karnofsky performance status score, the number of brain lesions, kidney cancer were significant prognostic factors for survival. Multivariate analysis showed that preoperative Karnofsky, kidney cancer and the method of resection were variables correlated with survival time.⁵ However, surprisingly the number of metastases did not demonstrate statistical significance.

Although it is a very interesting study, it has several limitations being the most relevant the following ones: the small sample size, the very selected group of patients and the lack of a control arm with a different treatment option such as whole brain radiation therapy or stereotactic radiosurgery.⁵

Other series have shown similar clinical features and different ranges of survival.⁶

The patient described here did not present any focal deficit but his family reported a persistent change in his mental status

Figure 4 Bilateral intraventricular lesions.

which was the reason to attend to the emergency service. Besides there was not any evidence of progressive disease outside the central nervous system with normal levels of enolase and ProGRP. Although a prompt treatment with high doses of steroids was started, the clinical course got rapidly worse and the patient died without any chance of other treatments.

This case reflects the really bad prognosis of many cases with central nervous system metastases although different treatment strategies have been tried. Therefore, further studies will be necessary to improve the prognosis of these patients.

Learning points

- ▶ The general frequency of intraventricular metastases is very low. The differential diagnosis would be primary intraventricular neoplasms.
- ▶ Intraventricular metastases from SCLC have not been previously reported.
- ▶ Whenever a patient with cancer presents an altered mental status, a CT scan should be performed to check if central nervous system metastases exist.
- ▶ Radical surgical resection seems to be the most relevant option for several patients with intraventricular metastases. Unfortunately although it achieves the longest survival time, this treatment is not possible for many patients.

Competing interests None.

Patient consent Obtained.

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