CASE REPORT

Metastatic lung cancer, an interesting stroke mimic

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SUMMARY

An elderly man presented to the emergency department with symptoms of a left-sided weakness. A CT of the brain scan showed an abnormality, and he was diagnosed with a stroke and admitted to the stroke unit. The stroke consultant reviewed him the next morning; a detailed history was acquired and imaging reviewed. As a result of the history of neurological symptoms, a diagnosis of malignancy was suspected and an MRI of the brain was ordered. This did not show a stroke but suggested a mass lesion. A CT of the chest, abdomen and pelvis was ordered to rule out a primary cause. Unfortunately, this showed widespread metastatic carcinoma with a left upper lobe primary (T4 N3 M1b). This was confirmed on histology. The patient died soon after the diagnosis.

BACKGROUND

This is a recognised, but unusual presentation of an advanced lung carcinoma. However, one might expect some symptoms related to the primary tumour on presentation. Extensive imaging was used to diagnose the case and this is valuable as a teaching point, highlighting the vital importance of an accurate history of symptoms, basic initial imaging (an admission chest X-ray) and an awareness of stroke mimics.

CASE PRESENTATION

This patient presented to his general practitioner (GP) with a 4-6 week history of non-specific symptoms and was referred to the emergency department. After giving a vague history of a left-sided weakness a CT brain was organised. This suggested a right middle cerebral artery infarct with secondary haemorrhagic transformation and he was admitted to the stroke unit.

The next morning he was seen by the stroke consultant, who obtained a progressive, month-long history of dysarthria, dyspraxia and left-sided weakness.

There were no classical symptoms of malignancy. However, a strong family history of lung carcinoma was established with a 120 pack-year history.

On examination the patient was comfortable at rest; there was a noticeable left-sided facial droop with loss of definition of the nasolabial fold. He was clubbed.

Positive findings on the cranial nerve (CN) examination included weakness in the muscles innervated by CN VII on the left, and deviation of the tongue to the right.

On peripheral neurological examination there was a left-sided pronator drift, reduction in tone and power in the left upper limb (Medical

Research Council grade IV) and impaired coordination on that side.

All other examinations were unremarkable, aside from a resting sinus tachycardia on ECG.

INVESTIGATIONS**CT brain**

This showed a high right parietal lobe intracerebral haematoma (2.7×2.4 cm), with surrounding vasogenic oedema. There was a minimal mass effect.

From these results an MRI of the brain was recommended by the radiologist (figure 1).

MRI of the brain

This showed an ill-defined, fairly ovoid, heterogeneous space-occupying lesion infiltrating the cortical and subcortical levels of the right parietal region. It also showed multiple areas of cystic degeneration and was surrounded by grey I-II perifocal vasogenic oedema (figures 2–4). Again no ventricular displacement was seen. A differential diagnosis was given of an intermediate grade space occupying lesion of the right high parietal region or a solitary metastasis.

CT chest/abdomen/pelvis

This showed a large left upper lobe pulmonary mass extending to the left hilum with associated atelectasis of the entire left upper lobe. It also showed an anterior mediastinal, aortopulmonary, precarinal and bilateral hilar lymphadenopathy as well as a large subcarinal confluent lymphadenopathy. There was encroachment and likely invasion into the left main pulmonary artery and its branches (figure 5).

Figure 1 CT brain (non-contrast) admission: There is a high-density focus in the anterior high right parietal lobe with surrounding vasogenic oedema. It measures approximately 3×2.5 cm in size.

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Figure 2 MRI of the brain (precontrast and postcontrast) day 1: axial T2-weighted section confirms ovoid-shaped mixed signal mass in the subcortical high right parietal lobe.

Figure 4 MR brain (precontrast and postcontrast) day 1: coronal T1-weighted shows the subcortical parietal location, the surrounding oedema and the slight mass effect.

There were also multiple pulmonary metastases bilaterally and a small left pleural effusion. Aside from a 4 cm low-density lesion within the spleen suggestive of a further metastasis there were no others, systemically. It was staged as T4 N3 M1b.

DIFFERENTIAL DIAGNOSIS

From the initial presentation and CT brain the patient was admitted to the stroke unit for a suspected right MCA infarct, with secondary haemorrhagic transformation (figure 1).

From the initial brain MR imaging (figures 2–4), the diagnosis then changed to a suspected mass lesion.

It was not until a CT chest/abdomen/pelvis was requested that it was seen that this case was due to a left-sided lung primary and extensive metastasis (figure 5).

TREATMENT

The patient was started on dexamethasone. He was seen by the lung cancer team and referred to a consultant oncologist; sadly he died soon after diagnosis.

OUTCOME AND FOLLOW-UP

The patient was referred to the respiratory oncology and palliative care team that managed his care.

DISCUSSION

In the literature there are many presentations of multifocal strokes related to lung carcinoma, due to tumour emboli. However, presentations such as this are less common.

Figure 3 MRI of the brain (precontrast and postcontrast) day 1: axial T1-weighted demonstrates mild and heterogeneous postcontrast enhancement of the mass.

Figure 5 CT chest/abdomen day 1: large left upper lobe mass with associated atelectasis. There is suggestion of invasion into adjacent structures including the left main pulmonary artery and pericardial margins. The precarinal lymphadenopathy is also seen in this section.

These are acknowledged in the literature as stroke mimics. Most commonly, these are Todd's paresis or hemiplegic migraines, epilepsy, conversion disorders, or occasionally, primary tumours.^{1 2} They are more prevalent in patients under the age of 50 (20%) than over 50 (3%).³ These mimics are a concern, especially in the advent of the 'stroke call' and the centralisation of emergency stroke care to specialist centres in the UK, to enable time-critical thrombolysis.⁴ The opposite to this presentation are stroke chameleons; this is when a stroke is mistaken for another disease.¹

In this case the patient presented with a progressive, long-standing neurological history. It is unlikely this would have been caused by a vascular event, which usually displays a shorter, sharper manifestation. His CN palsies suggest that the metastasis perhaps encroached further medially towards the paths of CN VII and XII than suggested on the MRI report, or this may be due to the vasogenic oedema surrounding the lesion itself (figures 2–4). It seems that the corticobulbar fibres of CN XII are unaffected, due to the ipsilateral, rather than contralateral, deviation of the tongue. However, given the size of the mass lesion on the original CT (figure 1), it is surprising that he presented with such 'mild' neurology.

The tachycardia evident on his admission ECG may have been secondary to invasion of the pericardial margins evident in figure 5. However, due to his disease staging this was not further investigated with echocardiography.

One factor to consider is the referral letter from the GP; sadly this was missing from the notes. However, if the initial referral letter was suggestive of a stroke then this can bias the clerking and initial investigations, particularly when the focus is often on obtaining an early CT brain.

A chest radiograph would have been pragmatic after eliciting his extensive smoking history. This would undoubtedly have led to the diagnosis sooner enabling more focused patient care. A detailed neurological history on admission might have revealed that this was a stroke mimic rather than a stroke. Instead, specialist imaging was used to confirm the ultimate diagnosis.

As patients presenting with a stroke are still often met by one of the most junior members of the clinical team, an awareness of these differential diagnosis is key as is sticking to the basic principles of history taking, examination and timely investigations.

Learning points

- ▶ A chest X-ray (and ECG) should always be requested prior to admission to the ward.
- ▶ An accurate history and examination is of vital importance.
- ▶ A progressive neurological presentation is unlikely to be a stroke.
- ▶ Lung carcinoma should always be considered as a differential diagnosis in patients with an extensive smoking history and family history.
- ▶ Physicians should be aware of other diagnoses that mimic strokes.

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