CASE REPORT

Meningioma: An Important Stroke Mimic

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ABSTRACT

Rapid Stroke is a common clinical problem. Stroke can be broadly divided into ischaemic and haemorrhagic stroke. Ischaemic stroke can be further classified by TOAST classification into large-artery atherosclerosis, cardioembolism, small vessel occlusion, the stroke of other determined aetiology and stroke of undetermined aetiology. Importantly, we need to be wary of important stroke mimics such as brain tumour, demyelination, intoxication as they can lead to changes in clinical management. Here, we would like to illustrate a case of meningioma which clinically mimics a stroke. This patient is a 78-year-old lady who initially presented with sudden onset right-sided body weakness associated with slurred speech and facial asymmetry. An urgent plain computed tomography (CT) of the brain showed hypodensities at the left middle cerebral artery territory. However, re-evaluation noted her to have a normal Glasgow Coma Scale without any cortical signs, cerebellar sign or dysphasia. In view of these, stroke mimics was suspected. A contrasted CT brain was done which confirmed the diagnosis of meningioma. She was offered surgical intervention for meningioma but she was not keen on it. In conclusion, this case highlighted the importance of clinical evaluation in recognising stroke mimics.

INTRODUCTION

Stroke is one of the leading causes of long-term disability throughout the world (Caruso et al., 2016). In recent years, there is a breakthrough in the treatment of acute ischaemic stroke (AIS), resulting in changes

in the treatment algorithm. With the introduction of thrombolytic therapy and mechanical thrombectomy, it results in better functional outcome (Graeme, 2017). Ischaemic stroke can be further classified by TOAST classification into large-artery atherosclerosis, cardioembolism, small vessel occlusion, a stroke of other determined aetiology and stroke of undetermined aetiology. However, it is important to diagnose stroke correctly as the treatment is different from other stroke mimics. Administering thrombolytic therapy to a stroke mimic will not bring benefits to the patient. Important stroke mimics that we need to remember including demyelinating disease, cerebral abscess, Todd's paralysis, hemiplegic migraine, conversion disorder or brain tumour (Segal et al., 2012; Vilela, 2017). To differentiate these stroke mimics from stroke, we need to systematically examine and evaluate our patients by clinical examination and neuroimaging. In this present case report, we would like to illustrate a case of meningioma, mimicking acute ischaemic stroke.

CASE PRESENTATION

A 78-years-old lady with a background history of diabetes mellitus, hypertension, dyslipidaemia and complete heart block on a permanent pacemaker presented with sudden onset of right-sided body weakness 7 hours prior to admission. It was associated with facial asymmetry, drooling of saliva, slurred speech and difficulty in swallowing. Otherwise, there was no fever, headache, blurring of vision, dizziness, nausea, vomiting, loss of consciousness and seizure.

On examination, her blood pressure was 163/55 mm Hg, heart rate was 86 beats per minutes, afebrile with Spo2 99% under room air. Initial neurological examination revealed

upper motor neuron of right facial nerve palsy with reduced power of 3/5 for the right upper and lower limb. Her BE-FAST (Balance, Eye, Face, Arm, Speech, Time) score was 2, ROSIER (Recognition of Stroke in the Emergency Room) score was 3 and NIHSS (National Institutes of Health Stroke Scale) score was 6. Stroke was suspected based on acute onset of neurological deficits and the patient's risk factors. An urgent plain computed tomography (CT) of the brain showed hypodensity at the left middle cerebral artery (MCA) territory (Figure 1). She was then admitted with the diagnosis of acute ischaemic stroke.

Figure 1 Non-enhanced CT brain showing hypodensities at left MCA territory (arrow)

After admission to the ward, she was reassessed again. Upon reassessment, it was noted that the constellation of signs and symptoms were not consistent with acute left MCA infarction. She has a normal Glasgow Coma Scale (GCS) without any cortical signs, cerebellar sign or dysphasia. She also did not have gaze palsy on examination and she has a normal visual field. Stroke mimics was suspected and a contrasted CT scan of the brain was done (Figure 2).
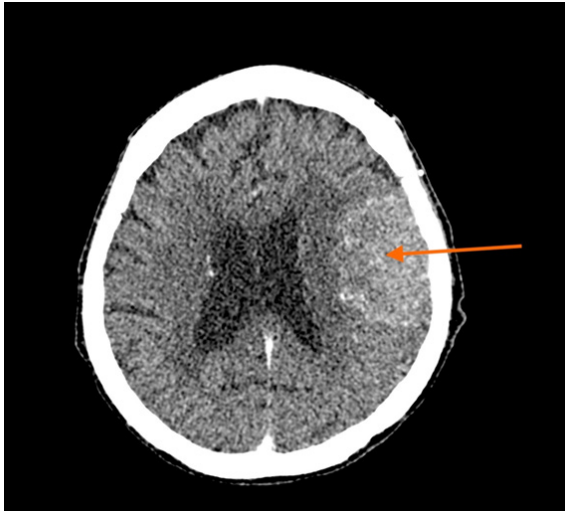
Figure 2 Contrast-enhanced CT brain showing solitary enhancing extra-axial brain parenchymal lesion at frontoparietal region measuring $5.3 \times 3.8 \times 5$ cm (arrow), suggestive of meningioma

Her contrast-enhanced CT brain showed a solitary enhancing extra-axial brain parenchymal lesion at the frontoparietal region measuring $5.3 \times 3.8 \times 5$ cm with no significant perilesional oedema, suggestive of meningioma. She was then referred to the neurosurgical team for further evaluation. She was counselled by the neurosurgical team for excision of meningioma but she refused surgical intervention. She was then followed up on regular basis. On follow up, she remains well with no new symptoms apart from right-sided body weakness.

DISCUSSION

Stroke is a clinical syndrome whereby there are acute onset neurological deficits attributable to acute focal injury of the central nervous system by a vascular cause (Sacco et al., 2013). It can be either ischaemic or haemorrhagic in origin. Ischaemic stroke can be further classified by TOAST classification into large-artery atherosclerosis, cardioembolism, small vessel occlusion, the stroke of other determined aetiology and stroke of undetermined aetiology. Knowledge of neuroanatomy and vascular anatomy is important in the clinical diagnosis of stroke.

Diagnosis of stroke can be achieved by careful clinical evaluation paired with neuroimaging tools. A stroke is a vascular event in the brain. The constellation of signs and symptoms of a patient should correlate with the certain vascular territory (Vachha et al., 2014). The patient will present differently according to the affected vessels. Various tools have also been developed to aid in identifying stroke. BE-FAST (Balance, Eye, Face, Arm, Speech, Time) and ROSIER (Recognition of Stroke in the Emergency Room) scale can be useful (Anathhanam et al., 2017). Importantly, we also need to consider the patient's risk factors for a vascular event and the National Institutes of Health Stroke Scale (NIHSS) score. Most reported cases of stroke mimics were characterised by low vascular risk factors and low NIHSS score (Okano et al., 2018).

Non-enhanced computed tomography (CT) of the brain is the first line neuroimaging tools for suspected AIS. In the early stage of stroke, the CT brain may be normal (Moulin et al., 1996). The typical CT features of stroke include hypodensities in the vascular territory with occasionally mass effect. However, we must always correlate neuroimaging findings clinically. Other additional neuroimaging tools include contrast-enhanced CT, magnetic resonance imaging (MRI) and MR angiography (Winkler et al., 2009). These will help exclude brain tumour, abscess or demyelinating disease.

In this patient, she presented with acute onset neurological deficits. However, she does not have any cortical sign, no dysphasia and she has a normal conscious level. This is not typical of a large vessel stroke. Hence, a contrasted scan was done and it confirmed the diagnosis of meningioma. This case highlighted the importance of careful clinical evaluation and clinical correlation with neuroimaging in approaching acute neurological deficits.

On the other hand, meningioma is the most common benign intracranial tumour (Marchand et al., 2014). It is a tumour that originates from arachnoid cells, granulations, the stroma of the perivascular space and the choroid plexus. It accounts for 13 – 20% of all intracranial tumours (Koech et al., 2013). It commonly affects adult more than 65 years old with female preponderance. Exposure to ionizing radiation, sex hormones and predisposing genetic condition are known risk factors for meningioma (Fogh et al., 2016). Clinically, a patient may complain of headache, visual disturbances, anosmia, hemiparesis and seizures. Computed tomography of the brain can diagnose meningioma and MRI brain will help on best surgical approach (Koech et al., 2013). The mainstay of treatment for meningioma is surgical resection of the tumour. Complete surgical resection of the tumour is preferred when the tumour is in an accessible location. Depending on histological grade and extent of resection, some patients may adjuvant radiosurgery or radiotherapy (Euskirchen et al., 2018).

CONCLUSION

Though stroke is a common clinical problem, it is important to identify stroke correctly as the treatment algorithm is different. Good clinical evaluation coupled with neuroimaging tools is pivotal in excluding stroke mimics. Important stroke mimics are seizures, hypoglycaemia, migraine, tumour, abscess and conversion disorders.

CONFLICT OF INTEREST

The authors declare that they have no competing interests in publishing this case.

CONSENTS

Written consent was obtained from the patient to publish this case report. A copy of the written consent is available for review by the Chief Editor.

ACKNOWLEDGEMENTS

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