Pontine stroke: a rare mimicker of Bell's palsy

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SUMMARY

Pontine infarct is a rare but clinically significant cause of an isolated facial nerve palsy. Prompt diagnosis with the use of magnetic resonance imaging (MRI) allows early initiation of treatment for such patients. We report a 62-year-old gentleman with diabetes, hypertension, and gout, presenting with lower motor neuron facial nerve palsy. This report highlights that isolated facial nerve palsy is not always associated with Bell's palsy, which remains the commonest cause of facial nerve paralysis. A thorough neurological examination and good clinical correlation with the patient's history and physical findings, coupled with the use of facial nerve anatomical knowledge and early employment of MRI, are imperative in clinching the diagnosis.

INTRODUCTION

Stroke carries significant morbidity and mortality. Brainstem stroke, commonly located at the pons, accounts for 10% of all ischemic strokes.[1] While pontine stroke is a rare but significant cause of an isolated facial nerve paralysis, it should not be easily dismissed and misdiagnosed as Bell's palsy. A strong clinical acumen and correlation with a patient's history and neurological examination allows a clinician to determine the precise aetiology of the facial palsy. Accurate and timely diagnosis with the use of MRI is instrumental in the management of an acute ischemic stroke to ensure good clinical outcomes in patients. In this report, we describe a rare presentation of pontine infarct with unilateral facial palsy and report the limitations of CT scan and MRI, emphasising on early detection of pontine stroke via MRI.

CASE REPORT

Our patient is a 62-year-old Malay gentleman with diabetes, hypertension, and gout. He presented to us with a sudden onset of right facial asymmetry, which was associated with slurring of speech, giddiness, blurring of vision, and mild right-sided weakness for 2 days in duration.

On examination, he was conscious and noted to have dysarthria. His blood pressure was recorded at 192/119 mmHg. Heart rate was 84 beats per minute, regular in rhythm. Neurological examination showed an obvious loss of right forehead creases, inability to close the right eye, loss of right nasolabial fold, and drooping of the right angle of mouth (Figure 1). All other cranial nerves were intact. Motor examination showed a mild right-sided weakness over the upper and lower limbs, with a power of 4/5, which quickly resolved the next day. Sensation was intact, and there were no cerebellar signs. There was no carotid bruit. His NIHSS score was 4.

ECG (electrocardiogram)showed sinus rhythm. His blood parameters, including full blood count and renal profile, were normal. Lipid profile showed a raised LDL level of 3.9 mmol/L and a fasting glucose level of 7.2 mmol/L. Computed tomography (CT) imaging of the brain did not reveal any abnormality. An initial differential diagnosis of Bell's palsy was considered. However, putting together his acute presenting symptoms, hypertension, and a normal CT brain finding, we proceeded to perform an MRI scan of the brain. It confirmed a small acute central pontine infarct with non-specific small foci of hyperintense signal at bilateral frontal lobes, representing small vessel disease or old lacunar infarct (Figure 2). Magnetic resonance angiography (MRA) was normal.

A final diagnosis of isolated facial nerve palsy secondary to acute pontine infarct was made. He was started on aspirin and clopidogrel as well as atorvastatin. Subsequently, he was discharged well with residual facial asymmetry and a complete resolution of his right-sided weakness. A repeat brain MRI performed a week later showed no worsening of the infarct.

DISCUSSION

A complete facial paralysis in the setting of stroke is a rare presenting symptom. With an annual incidence of approximately 15–30 in 100,000, Bell's palsy is the most common cause of complete facial palsy, accounting for 72% of cases, while pontine infarct contributes around 1% of such cases.[1,2] Bell's palsy is mostly idiopathic in nature, affecting individuals between ages 15 and 45, and its symptoms generally resolve within six months. It is a diagnosis of exclusion.[2] Strokes with facial involvement usually involve a unilateral lower facial palsy, often accompanied with symptoms such as hemiplegia, slurred speech, and other central symptoms. Risk factors for stroke include advanced age, hypertension, diabetes, dyslipidaemia, smoking, and cardiovascular diseases.[3] Therefore, isolated facial nerve palsy is not always synonymous with Bell's palsy. It is imperative to differentiate between the two as management and clinical approach differ for both.

In addition to having a strong clinical index of suspicion, good application of neuroanatomical knowledge and correlation of the patient's signs and symptoms enable us to deduce the location of the infarct. A clinical-radiological

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Fig. 1: Loss of right forehead creases upon raising eyebrows and loss of right nasolabial fold.

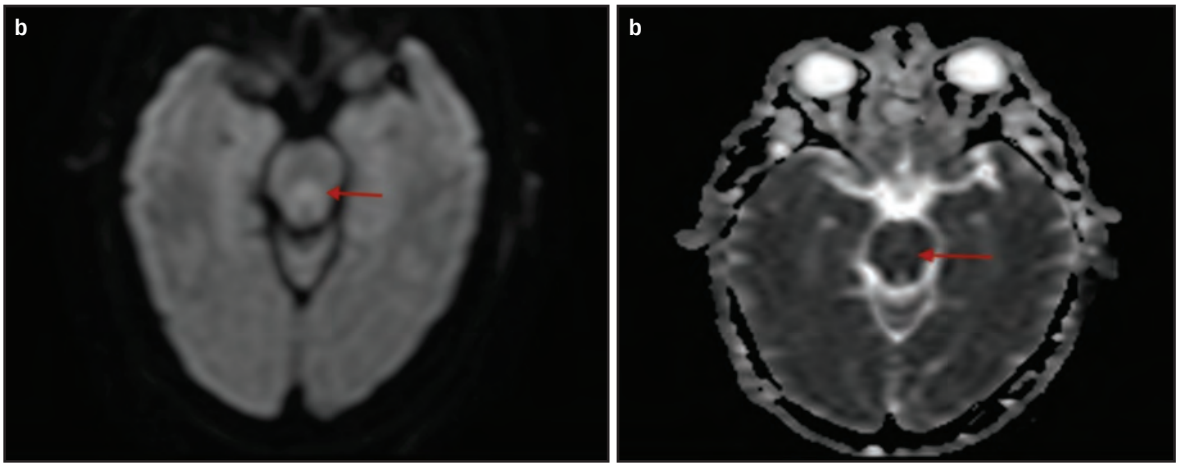

Fig. 2 a&b : DWI/ADC sequence showing small foci of Hyperintense signal/restricted diffusion at the central pontine.

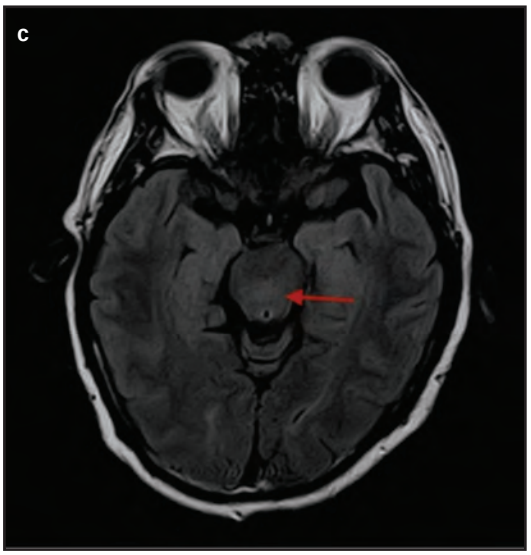

Fig. 2c : Axial FLAIR sequence depicting the similar hyperintense focus at the central pontine.

correlation study of pontine base infarct syndromes published in the American Heart Association (AHA) journal by Kim JS et al. classified pontine syndromes into pure motor hemiparesis, sensorimotor stroke, ataxic hemiparesis, and dysarthria-clumsy hand syndromes according to its clinical presentation.[4] Variants of dysarthria-clumsy hand syndrome include dysarthria-facial paresis, which was similar to that reported in our patient. The study concluded that large lesions involving the paramedian caudal or middle pons correlated with severe hemiparesis (PMH), whereas lesions of similar size located in the paramedian rostral pons tended to produce dysarthria-clumsy hand syndrome. Out of the 37 patients studied, only 2 patients with similar clinical presentation to our patient (dysarthria, facial paresis, and mild hemiparesis) had a central, small pontine infarct.[4] To the best of our knowledge, there have been no reported cases of central pontine infarct presenting as such just yet; most of which were reported to have a dorsal pontine infarct instead. This suggests that not all pontine infarcts manifest in a typical pontine syndrome presentation.

An additional challenge in diagnosing a pontine stroke in a presentation that mimics Bell's palsy is the availability of diagnostic imaging facilities. CT is the most widely used diagnostic imaging tool in most centres due to its availability and rapid acquisition time. It is accurate in distinguishing vascular and non-vascular lesions as well as differentiating infarcts from haemorrhages. This allows time-critical decision-making with regard to treatment such as in patients who are considered potential candidates for thrombolysis.[5] However, small infarcts are less likely to be visible than large ones on CT imaging, especially those involving the posterior circulation and the brainstem.[6] Recent studies have shown that MRI is more sensitive in identifying ischemic lesions in an acute ischemic stroke setting, even in a clinical presentation of minor stroke or transient ischemic attack (TIA).[7] Infarcts can be detected via MRI using sequences such as fluid-attenuated inversion recovery (FLAIR) or diffusion-weighted imaging (DWI). Of all techniques, DWI has the greatest sensitivity. It provides the earliest information about the physiology of the infarct and enables further classification of stroke. DWI also accurately monitors the evolution of the ischemic core over time, which is crucial in the selection of patients for endovascular treatment.[8] Some drawbacks include limited access, longer scan duration, and longer screening time for contraindications. In centres where MRI service is available, these should not be a major obstacle.[5] These advantages of MRI over CT support the early use of MRI as an imaging modality in an acute stroke protocol especially when clinical diagnosis is a challenge.

An additional diagnostic challenge here is the presence of mild ipsilateral hemiparesis in this patient given that most pontine syndromes manifest with contralateral hemiparesis. This could possibly be explained by the MRI findings of a small vessel disease or an old lacunar infarct. It is not uncommon in clinical practice for patients to not notice or report clinical symptoms of a minor stroke until it is detected incidentally on MRI findings much later during a hospital admission. Our history taking is very much dependent on the patient's medical literacy. From a psychological point of view, potentially life-threatening or life-altering events would be remembered more vividly and reported more accurately compared to less complex events, thus giving rise to the discrepancy in the patient's reported neurological symptoms as opposed to the expected neurological outcome in a pontine stroke.[9]

CONCLUSION

Isolated facial nerve palsy resulting from pontine stroke is a rare mimicker of Bell's palsy. Ultimately, Bell's palsy remains a diagnosis of exclusion. Clinicians must remain vigilant in such clinical presentations especially in the setting of elderly patients with cardiovascular risk factors. This case highlights the importance of thorough neurological examination and good clinical correlation with patient's symptoms and radiological evidence. Evidently in this case, the early use of MRI enables rapid detection and localisation of the stroke lesion, which is crucial in reducing morbidity and mortality.

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CONFLICT OF INTEREST

The authors have no conflict of interest with respect to this case report.

PATIENT'S CONSENT

The patient gave his consent for the use of his photograph and the publication of this case report.

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