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ACUTE CENTRAL TYPE FACIAL PARALYSIS AS A RARE MANIFESTATION OF CEREBRAL ARTERY STROKE MEDIA

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ABSTRACT

Acute central type facial paralysis is a rare manifestation of cerebral artery media stroke (MCA) which is often mistaken for Bell's palsy, so it can becauses delays in diagnosis and therapy. This study aims to identify and analyze the atypical clinical manifestations of central-type facial paralysis as the main symptom of MCA stroke, as well as highlight the importance of proper diagnosis and management. This study is a case report of a 40-year-old woman with the main complaint of face being pulled to the right and tongue deviation to the left without weakness of the extremities. Neurological, radiological (CT-scan), and medical evaluation are carried out thoroughly. The diagnosis of MCA ischemic stroke was established based on CT-scan results showing hypodentic lesions in the primary motor areas of the face and tongue. Management with antiplatelets (Clopidogrel) successfully prevents the worsening of the condition. No severe neurological deficits were found, and the prognosis was likely to be good. However, vascular risk factors such as hypertension remain an important concern in the prevention of recurrence. Central-type facial paralysis can be the only manifestation of MCA stroke and is easily confused with Bell's palsy. Therefore, clinical vigilance, proper radiological examination, and comprehensive patient therapy and education are crucial in improving clinical outcomes and preventing stroke recurrence.

Keywords: Central facial paralysis, cerebral artery stroke media, atypical manifestations, focal neurological deficits, stroke management.

Introduction

Stroke is the leading cause of disability and death worldwide with highly variable clinical manifestations. Strokes that hit the cerebral artery

media (MCA) generally cause contralateral hemiparesis, hemianopia, and aphasia when it hits the dominant hemisphere. However, clinical manifestations in the form of acute central facial paralysis as the main symptom of MCA stroke are relatively rarely reported and can be a diagnostic challenge for clinicians (Fonseca et al., 2021). Central facial paralysis is caused by lesions in the primary motor cortex or corticobulbar tract and has different characteristics of peripheral facial paralysis. In central facial paralysis, usually the upper part of the face is still maintained due to bilateral innervation for the upper muscles of the face, while the lower part of the face experiences weakness. However, when central facial paralysis appears as the predominant manifestation in acute MCA stroke, diagnosis can be delayed as it is often thought to be Bell's palsy or another more common condition (Wongwandee & Hongdusit, 2025).

The medial cerebral artery (MCA) is the largest terminal branch of the internal carotid artery and bleeds most of the lateral areas of the cerebral hemisphere, including the motor cortex of the face and tongue. Occlusion in specific branches of MCA can result in rare focal neurological deficits such as central-type facial paralysis without other significant motor deficits. An understanding of these anatomical variants and rare clinical manifestations is essential for early diagnosis and appropriate management (Krasteva et al., 2020). Rapid and accurate identification of acute strokes with atypical manifestations such as isolation central facial paralysis is essential given that reperfusion therapy has a golden period time window as the main criterion. Delayed diagnosis can result in a loss of opportunity for timely intervention and potentially worsen the long-term prognosis. Recent research suggests that strokes with manifestations of acute central facial paralysis have certain radiological characteristics on diffusion and perfusion imaging, which can help with faster identification (Hurford et al., 2020). Through this article, we aim to examine the rare clinical manifestations of MCA stroke in the form of acute central facial paralysis, anatomical-clinical correlation, diagnostic challenges, and optimal management strategies based on the latest scientific evidence. With a better understanding of these clinical variants, it is hoped that it can increase clinical vigilance, speed up diagnosis, and improve the outcomes of patients with similar conditions.

Case Description

Mrs. RF, a 40-year-old woman, came to the emergency room with the main complaint of a swollen face to the right that was felt since 1 day before entering the hospital. The main complaint is accompanied by a headache, but it is not accompanied by weakness on one side of the body. Previously, the

patient had been treated at a first-level health facility for the complaint, and was diagnosed as *Bell's Palsy*. The patient also denied any nausea and vomiting. Bowel and urinary function and other neurological status within normal limits. From the past history of the disease, the patient denied having hypertension and diabetes mellitus. There is no significant family history of illness. The patient has a history of allergy to Ciprofloxacin. Previous treatment history includes Neurodex, Methylprednisolone, and Antalgin. There was no meaningful psychosocial history in this patient.

On physical examination, the general condition of the moderately ill patient with composing awareness (GCS 15) was obtained. Vital signs showed blood pressure of 161/83 mmHg, pulse 90 times per minute, breathing rate 20 times per minute, and oxygen saturation of 98% in room air. The head examination shows no signs of anemia, icteric, cyanosis, or dyspnea. The eyes, ears, and nose are within normal limits. On oral examination, T1/T1 tonsils were found, not hyperemic, with a slight deviation of the tongue to the left when the tongue was extended. The neck is within normal limits without enlargement of lymph nodes. Pulmonary examination showed symmetrical chest movements, vesicular breathing sounds in both lung chambers, without wheezing, ronki, or retraction of the chest wall. Cardiac examination shows single S1 and S2 heart sounds, with no murmurs, gallops, or extrasystoles. The abdomen is palpable, intestinal noise is normal, no compressive pain, and no hepatosplenomegaly is found. The inguinal and genital regions are within normal limits. Both upper and lower extremities have a red dry warm acral with a capillary refill time of less than 2 seconds, with no edema.

On neurological examination, nerve II was found with a 3mm/3mm isocor spherical pupil. Nerves III, IV, and VI show eyeball movement within normal limits. Examination of nerve VII showed the presence of central type facial paralysis on the left side. Nerve XII shows paralysis of the lingualis nerve on the left side. Examination of motor strength in the upper and lower extremities was symmetrical with a value of 5555/5555. Physiological reflexes in both limbs within normal limits (BPR +2/+2, TPR +2/+2, KPR +2/+2, APR +2/+2). The pathological reflexes of Babinski, Chaddok, Hoffman, and Tromner are negative. Sensory examination within normal limits.

Figure 1. Physical Portrait of Central Type Left Side Facial Paralysis accompanied by Central Type Left Side Lingual Nerve Disorder.

The treatment given to this patient included the administration of Clopidogrel with *a loading dose* of 300 mg on the first day, followed by a maintenance dose of 1x75 mg on the next day. Clopidogrel is an antiplatelet that is important to prevent further thrombotic complications (Wiwit Herawati et al., 2023). In addition, patients also receive symptomatic therapy in the form of intravenous fluids and are also advised to lie down completely in an effort to reduce the sudden increase in intracranial pressure that often occurs in acute strokes.

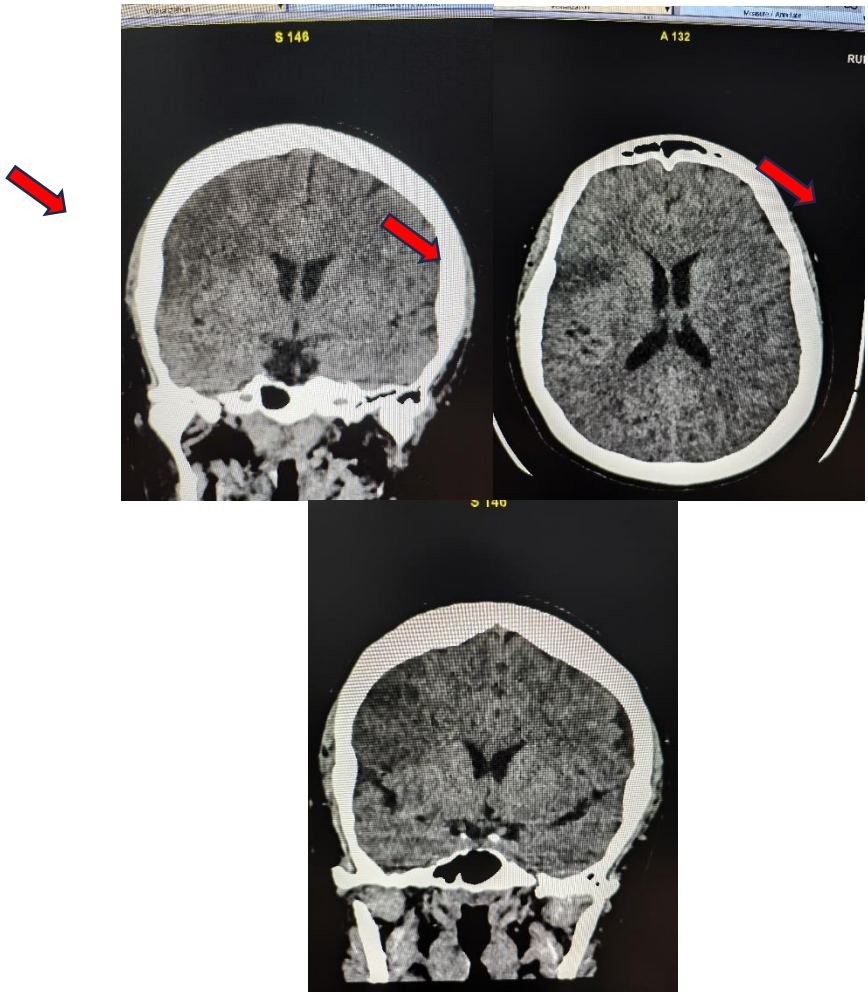

Figure 2. The results of the CT Scan Radiological Examination showed the presence of hypodens lesions in the right Primary Motor Area of the Hemisphere for the face and tongue.

The prognosis in Stroke Infarction patients is generally good with proper and early management. Factors that support a good prognosis in this patient are the new onset (1 day), the relatively young age of the patient, the absence of comorbidities such as diabetes mellitus, and immediate management. However, hypertension found in patients needs special attention to prevent further cerebrovascular complications. Further education on the importance of routine medication, blood pressure control, and facial physiotherapy exercises needs to be provided to support optimal recovery in these patients, as well as the research conducted by Asifa Lasmi et al. which showed the results of This study shows that various physiotherapy modalities have a significant contribution in accelerating the healing process of decubitus ulcers. Modalities such as ultrasound, electrical stimulation, phototherapy and Negative Pressure Wound Therapy (NPWT) have been scientifically proven to be able to improve blood circulation,

stimulate tissue regeneration, accelerate epithelialization, and reduce the risk of infection and inflammation. Electrical stimulation supports angiogenesis through increased VEGF expression, while phototherapy increases the production of ATP needed for tissue repair. NPWT creates an optimal wound environment by reducing exudate and necrotic tissue. The role of a physiotherapist also includes educating patients and families about recurrence prevention. While the effectiveness of these interventions is promising, challenges such as limited tools, training, and integration in service systems still need to be addressed. These findings confirm that physiotherapy modalities are not only complementary, but also a key component in multidisciplinary management of decubitus ulcers (Asifa Lasmi, Shava Intana Fernando, 2025).

Result and Discussion

The cases presented in this report present an unusual clinical manifestation of cerebral artery media (MCA) stroke, namely acute central type facial paralysis without a significant motor deficit of the extremities. This 40-year-old female patient came with the main complaint of a "rotting" face to the right (facial paralysis) accompanied by a deviation of the tongue to the left. Although initially diagnosed as Bell's Palsy, some clinical findings such as tongue deviation to the left (which indicates involvement of nerve XII) and high blood pressure (161/83 mmHg) lead to possible vascular etiology, especially MCA stroke with atypical manifestations. This manifestation is a diagnostic challenge in itself, given that classic MCA strokes generally feature pronounced contralateral hemiparesis, hemianopia, and aphasia when it hits the dominant hemisphere (Hurford et al., 2020). It is important to understand the difference between central and peripheral type facial paralysis. Central-type facial paralysis occurs as a result of lesions in the primary motor cortex or corticobulbar tract and has different characteristics from peripheral facial paralysis. In central facial paralysis, the upper part of the face generally retains its function due to bilateral innervation of the upper muscles of the face, while weakness mainly affects the lower part of the face. This is in contrast to peripheral facial paralysis such as Bell's Palsy which unilaterally affects all sides of the face, including the forehead (Fonseca et al., 2021). The diagnosis of Bell's Palsy in this case is questionable, especially in the presence of a deviation of the tongue to the left indicating the involvement of nerve XII, which is unusual in conventional Bell's Palsy.

The anatomical-clinical correlation is very important to understand in this case. The medial cerebri artery (MCA) as the largest terminal branch of

the internal carotid artery bleeds most of the lateral areas of the cerebral hemisphere, including the primary motor cortex in the precentric girus that controls contralateral facial movements. The areas of representation of the face and tongue in the primary motor cortex are close to each other, so vascular lesions in these areas can produce neurological deficits in the form of central facial paralysis and lingual palsy without involving the motor areas of the extremities located more superior and medial in *the motor* homunculus (Krasteva et al., 2020). A recent study by (Wongwandee & Hongdusit, 2025) suggests that occlusion in MCA-specific branches, especially the superior branch that provides vascularization of the inferior precentral girus (frontal operculum), can lead to clinical manifestations of acute central type facial paralysis without significant hemiparesis. The main diagnostic challenge in this case is the recognition of an MCA stroke with atypical manifestations. Research (Umirzakova et al., 2023) shows that about 3-7% of cases of acute MCA stroke can present themselves with central-type facial paralysis as the predominant manifestation, with or without other neurological deficits. Early misdiagnosis as Bell's Palsy is common and can delay the administration of adequate reperfusion therapy. In Ms. Riza's case, some vascular risk factors such as age 40 and stage 2 hypertension should increase suspicion of possible vascular etiology, although clinical manifestations are not typical for MCA stroke. Imaging examinations carried out in the form of CT scan of the head also play an important role in establishing the diagnosis. The results of CT Scans on this examination are important in the detection of the cause of the neurological deficit that occurs and can help rule out intracranial hemorrhage and the possibility of detecting acute ischemia, although the sensitivity of conventional CT Scans to early ischemia is still limited (Wallace & Liberman, 2021).

The management given to this patient has led to the treatment of acute stroke, with the administration of Clopidogrel as an antiplatelet with a loading dose of 300 mg followed by a maintenance dose of 75 mg. This approach is in accordance with current guidelines for the management of acute ischemic stroke, especially when patients come outside the thrombolysis time window or do not meet the criteria for reperfusion therapy. A recent metaanalysis by (Rakhmawati et al., 2020) showed that early administration of antiplatelets in non-cardioembolic ischemic stroke significantly reduced the risk of stroke recurrence and death. However, in the case of acute central facial paralysis as a manifestation of MCA stroke, a comprehensive vascular evaluation such as CT Angiography or MR Angiography should also be performed to further assess the status of vascular occlusion and determine a candidate for mechanical thrombectomy

if it meets the criteria (Bae & Hyun, 2024). The administration of methylprednisolone, which is usually given to patients *with Bell's Palsy*, is inappropriate when a stroke diagnosis has been established, as systemic corticosteroids are not recommended in the management of acute ischemic stroke based on the latest guidelines from the American Stroke Association and the European Stroke Organization. Corticosteroids can increase the risk of complications such as infections and hyperglycemia that have the potential to worsen neurological outputs (Powers et al., 2023). The administration of corticosteroids may be appropriate if the diagnosis *of Bell's Palsy* is maintained, but extra vigilance is needed for possible underlying vascular etiology.

The prognostic assessment in this case needs to take into account several factors. (Sookdeo et al., 2024) reported that MCA strokes with isolated or predominant manifestations of central facial paralysis generally had a smaller infarction volume and a better functional prognosis than MCA strokes with broader neurological deficits. However, the risk of stroke recurrence remains high, especially when vascular risk factors such as hypertension are not well controlled. In these cases, stage 2 hypertension detected requires long-term comprehensive management to reduce the risk of stroke recurrence and other vascular complications. Additional diagnostic modalities that may be considered for such cases include diffuse-weighted MRI imaging (DWI-MRI), which has a very high sensitivity to detect acute ischemia, particularly in strokes with atypical clinical presentation or minimal neurological deficits. A study by (Wongwandee & Hongdusit, 2025) shows that 95% of cases of acute central facial paralysis that are proven to originate from MCA stroke show hyperintense lesions on DWI-MRI, even though conventional CT Scans do not show abnormalities. Lesions are generally located in the inferior primary motor cortex (facial representation area) or corticobulbar tract in the subcortical alba substance. Assessment of cerebral perfusion with CT Perfusion or MR Perfusion can also help identify areas of the penumbra in cases that are still within the time window for reperfusion therapy.

Rehabilitation is an important component in the comprehensive management of this case. Although not specifically mentioned in the management plan, early and intensive rehabilitation is highly recommended to accelerate the recovery of facial function and prevent long-term complications such as contractures or syncinesis. A multidisciplinary approach involving physiotherapy, speech therapy (especially if dysarthria is present), and neurocognitive rehabilitation are key to successful rehabilitation (Kessler et al., 2020). Electrical stimulation, *mirror therapy exercises*, and *biofeedback* are therapeutic modalities that have shown

positive results in the recovery of post-stroke facial function, especially in cases with focal neurological deficits such as central facial paralysis (Vaughan et al., 2020). Secondary prevention is a crucial aspect in long-term management. Identification and modification of vascular risk factors, especially hypertension, should be a priority. Research by (Tosi et al., 2023) shows that strict blood pressure control (<130/80 mmHg) significantly reduces the risk of stroke recurrence in patients with previous ischemic strokes. In this case, a blood pressure of 161/83 mmHg indicates that hypertension has not been optimally controlled and requires adequate antihypertensive therapy and comprehensive lifestyle modifications. A thorough evaluation of the etiology of stroke also needs to be performed, including examination of lipid levels, blood sugar, evaluation of the heart with echocardiography to rule out the source of cardiac embolism, and carotid Doppler examination to assess the condition of extracranial blood vessels.

Patient education is an integral component of comprehensive management. The exact workings of the etiology of Bell's Palsy are still unclear, but viral infections, such as herpes simplex virus 1, rheumatic swelling, ischemia, immunological reasons, trauma to the nerves, and idiopathic reasons have been identified as possible causes. Educating Bell's Palsy patients requires an understanding of its causes, symptoms, and prognosis(Zhong et al., 2020).

Understanding the important differences between Bell's Palsy and stroke is essential for accurate diagnosis and timely intervention. The ways to educate Bell's Palsy patients are as follows:

1. explains that the symptoms of Bell's Palsy develop rapidly, usually reaching maximum severity within 48 to 72 hours, while stroke symptoms can appear suddenly.
2. Identifying facial paralysis caused by Bell's Palsy affects the entire side of the face, including the forehead, whereas strokes often affect only the lower part of the face, thus allowing the patient to frown.

Patients need to understand that the clinical manifestations of central facial paralysis and tongue aberration are likely symptoms of mild stroke, rather than conventional Bell's Palsy, so they require different therapeutic and secondary prevention approaches. Awareness of the warning signs of stroke ("FAST": Drooping face, Arm spasms, Difficulty speaking, It's time to call emergency services) also needs to be instilled to raise awareness of the possibility of stroke recurrence with different clinical manifestations in the future. Adherence to long-term antiplatelet and antihypertensive therapies needs to be emphasized to prevent stroke recurrence and other vascular complications (Bulwa et al., 2021). Looking back at the diagnosis and management given in this case, some important considerations are worth considering. More comprehensive diagnostic approaches such as diffusion-sequenced MRI of the head and cerebral angiography may be needed to

establish a more accurate diagnosis. Management with Clopidogrel in accordance with the principle of antiplatelets for acute ischemic stroke. Aggressive hypertension management is also necessary to achieve optimal blood pressure targets and prevent future stroke recurrences. In conclusion, this case highlights the importance of vigilance against the atypical clinical manifestations of MCA stroke, especially acute central-type facial paralysis with or without additional neurological deficits such as tongue aberrations. A proper and comprehensive diagnostic approach is urgently needed to distinguish it from more common conditions such as *Bell's Palsy*, especially in patients with vascular risk factors. Optimal management includes reperfusion therapy when criteria are met, antiplatelets for secondary prevention, management of vascular risk factors, especially hypertension, and early and comprehensive rehabilitation. With this holistic approach, it is hoped that it can improve long-term neurological outcomes and prevent future stroke recurrence in patients with similar clinical manifestations.

Conclusion

This article describes atypical clinical manifestations of cerebral artery media stroke (MCA) presenting themselves with acute central type facial paralysis without significant motor deficits of the extremities. Although initially diagnosed as *Bell's Palsy*, some clinical findings such as tongue deviation to the left (involvement of nerve XII) and stage 2 hypertension (161/83 mmHg) indicate an underlying vascular etiology. This atypical manifestation occurs due to lesions in the area of facial and tongue representation in the primary motor cortex or corticobulbar tract, which is located adjacent to the motor homunculus and receives blood supply from specific branches of MCA, especially the superior branch that bleeds the inferior precentralized girus (frontal operculum). The main diagnostic challenge in this case is to distinguish stroke-related central type facial paralysis from *conventional Bell's Palsy*. Central-type facial paralysis has a typical characteristic in the form of predominant involvement of the lower part of the face with the relative spread of the upper part of the face due to bilateral innervation of the muscles in the area. Research shows 3-7% of cases of acute MCA stroke can present themselves with central-type facial paralysis as the predominant manifestation, which is often misdiagnosed as Bell's Palsy. The management given in this case is in accordance with the principles of antiplatelet therapy for acute ischemic stroke through the administration of Clopidogrel based on the latest guidelines. Comprehensive vascular evaluation through diagnostic modalities such as DWI-MRI, CT/MR Angiography, and CT/MR Perfusion can help establish a more accurate diagnosis and determine optimal therapy strategies, including candidates for

reperfusion therapy. The prognosis of central-type facial paralysis due to MCA stroke is generally better than that of MCA stroke with broader neurological deficits, but the risk of stroke recurrence remains high especially when vascular risk factors such as hypertension are not well controlled. Early and intensive rehabilitation as well as secondary prevention through the identification and modification of vascular risk factors are key to long-term management. In conclusion, this case highlights the importance of vigilance against atypical clinical manifestations of MCA stroke, especially in patients with vascular risk factors. Proper diagnostic approaches, comprehensive management, and optimal secondary prevention can improve long-term neurological outcomes and prevent future stroke recurrence.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article

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