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Original Research Article

Clinical profile and sensory pattern in lateral medullary syndrome

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ABSTRACT

Background: Lateral Medullary syndrome is an acute ischemic stroke syndrome characterised by occlusion of the vertebral artery/posterior inferior cerebellar artery. The study aimed to describe the sensory pattern and clinical profile of patients admitted with lateral medullary syndrome.
Methods: This cross-sectional descriptive study was done in the neurology department at Thanjavur Government Medical College, Tamil Nadu. Twenty patients with acute stroke clinically suspected of lateral medullary syndrome were taken into this study for one year. Magnetic Resonance Imaging (MRI) of the brain with an MR Angiogram was done to confirm clinical suspicion of Lateral medullary syndrome. They were examined in detail for clinical profile and sensory pattern, and relevant investigations were done.
Results: Among the 20 LMS patients, 85% were males, and the mean age of occurrence was 53.2 years. All of them had acute infarcts in the lateral medulla. Hypertension, diabetes mellitus and dyslipidemia were the most common systemic risk factors. The most common sensory pattern observed was classical, with loss of sensation in the ipsilateral face and contralateral body in 45% of patients. The most common clinical presentation was walking instability, bulbar symptoms, and a longer hospital stay. The second most common pattern was only sensory impairment in the ipsilateral face, seen in 30%. Their clinical presentation was unsteadiness while walking, with no bulbar symptoms, shorter hospital stays, and better recovery.
Conclusions: LMS is an acute stroke syndrome common in males, often after 50 years, with hypertension, diabetes, and dyslipidemia as systemic risk factors.

Keywords: Lateral medullary syndrome, Stroke, Sensory loss, Dysphagia, Unsteadiness

INTRODUCTION

Lateral medullary syndrome (LMS), or Wallenberg syndrome, is posterior circulation stroke syndrome secondary to an intracranial vertebral artery or posterior inferior cerebellar artery occlusion. It is characterised by bulbar symptoms like dysphagia and dysarthria, unsteadiness while walking, different types of sensory impairment, hiccups, and Horner's syndrome.[1] Lateral medullary syndrome was first clinically described by Wallenberg in 1895. Though it is known as PICA syndrome, occlusion of the intracranial portion of the vertebral artery is seen in two-thirds of patients.[2] Sensory defect in LMS, characterised by dissociated distribution (ipsilateral face and contralateral hemi body, Limbs) was previously commonly described sensory pattern. However, it was found to be present only in one-third of patients. This type of sensory pattern was commonly seen in infarcts involving lateral superficial or the most posterolateral area of the medulla.[3] There are about seven other patterns seen, such as type 1 Stopford pattern, type 2 Stopford pattern, type 3 Stopford pattern, type 4 Stopford

pattern, pattern with loss of pain and temperature sensation in the ipsilateral face only, loss of pain and temperature sensation in the contralateral body and pseudospinal pattern.

Stopford pattern type 1 is characterised by loss of pain and temperature in the ipsilateral face and the contralateral side from the foot to a sensory level in the trunk. Stopford pattern type 2 is characterised by loss of pain, temperature in the contralateral face, upper limb, and upper trunk with a sensory level. Stopford pattern type 3 is characterised by loss of pain and temperature in the contralateral body and bilateral face. The Stopford pattern is characterised by pain and temperature loss in the contralateral and body. Loss of pain and temperature sensation in the ipsilateral face is due to the spinal trigeminal nucleus and its tract involvement. Loss of pain and temperature in the contralateral extremity and body is due to spinothalamic tract involvement. Different sensory patterns are due to the disruption of somatotopically organised fibres in the spinothalamic tract. Cervical and thoracic fibres are located medially in the spinothalamic tract, and lumbar and sacral fibres are located laterally in the spinothalamic tract. When a lesion affects the far lateral dorsal medulla, loss of pain and temperature in the ipsilateral face and contralateral side of the body from the foot up to the trunk occurs due to involvement of sacral and lumbar fibres in the spinothalamic tract and descending tract of the trigeminal nerve.[4] Many studies on the clinical-radiological profile of lateral medullary syndrome were done. It was found that dysphagia and dysarthria were common in patients with infarct in the rostral portion of the lateral medulla compared to caudal lesions because caudal lesions usually do not involve nucleus ambiguus.[5] The study aimed to describe the sensory pattern and clinical profile of patients admitted with lateral medullary syndrome (LMS) in the department of neurology in a tertiary care hospital in Thanjavur government medical college, Tamil Nadu.

METHODS

After getting approval from the Institutional Ethics Committee, this cross-sectional descriptive study was done in the neurology department at Thanjavur Government Medical College, Tamil Nadu. The study was conducted for one year, from Aug 2021 to July 2022, and an observational study was done on 20 patients diagnosed with acute ischemic stroke with lateral medullary syndrome.

Inclusion criteria

Age >18 and clinically suspected acute ischemic stroke with lateral medullary syndrome stroke, which is CT/MRI brain proven, were included.

Exclusion criteria

Patients with inconclusive evidence on imaging, patients with Transient ischemic attack, severe renal/hepatic disease, and intracranial space-occupying lesions on imaging were excluded.

Informed consent was taken from all the included patients, and a detailed clinical assessment, including examination for sensory patterns, was done. Relevant blood investigations and an MRI brain with MR angiography were done. The study proforma tabulated information regarding the clinical profile and radiological findings.

Statistical methods

All data were entered into MS Excel and presented as pie charts.

RESULTS

Of 20 patients, the mean age was 53.2 years; most patients were 51-60 years old. 85% of cases were male. The most common comorbid conditions were diabetes mellitus, hypertension, and dyslipidemia.

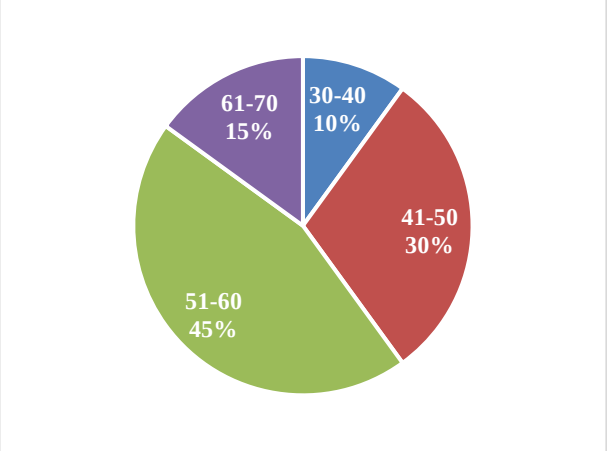

Figure 1: Distribution of age group.

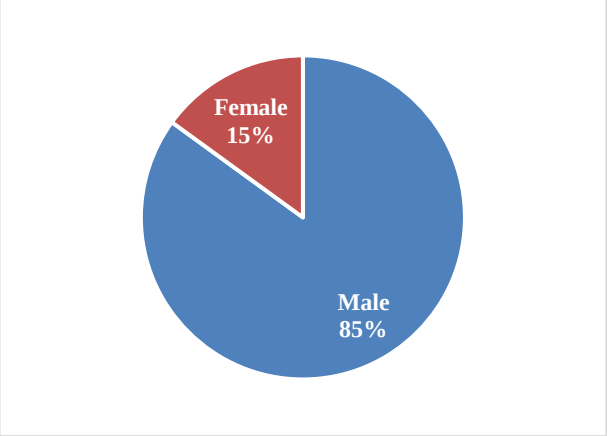

Figure 2: Distribution of gender.

The most common symptom was unsteadiness while walking, which was seen in 95% of cases. Sensory complaints of numbness and loss of temperature sensation

were seen in 90% of cases. Bulbar symptoms like difficulty swallowing, slurring speech, and nasal regurgitation were seen in 20% of cases. The most common sensory pattern observed was a classic pattern, with loss of pain and temperature in the ipsilateral face and contralateral body (45%). The second common observed pattern was the loss of sensation in the ipsilateral face. Patients with classic patterns had symptoms of instability, bulbar complaints, vomiting and slower recovery. Patients with sensory impairment in the face alone had only unsteadiness as a predominant symptom and showed early recovery (Figures 1-4).

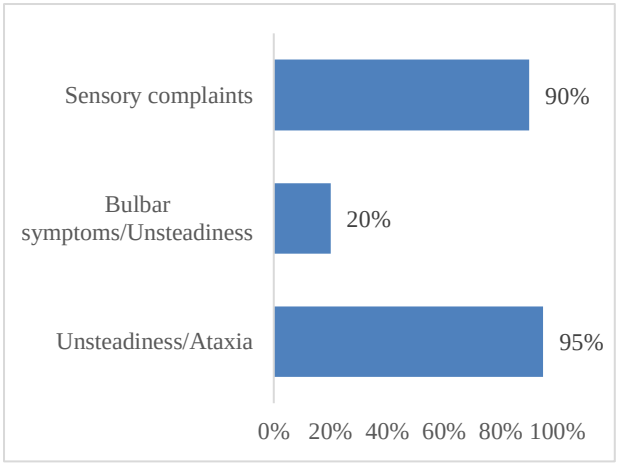

Figure 3: Distribution of clinical presentation.

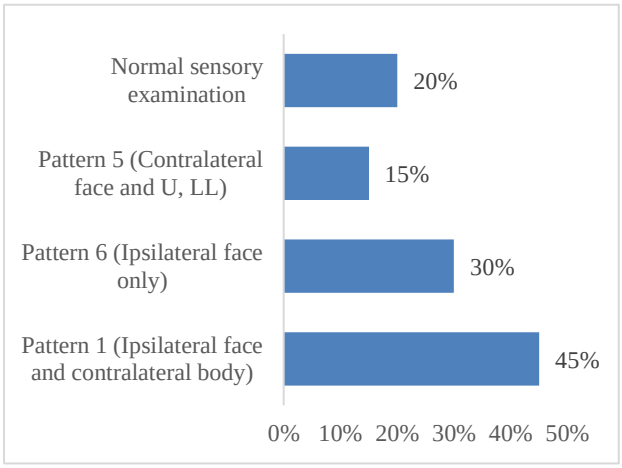

Figure 4: Distribution of sensory pattern in LMS.

DISCUSSION

A lateral medullary syndrome is posterior circulation stroke syndrome caused due to PICA or vertebral artery occlusion secondary to atherosclerosis/dissection/embolic occlusion. Clinical symptoms vary depending on the site of the lateral medulla involved. Rostral medullary lesions cause severe dysphagia compared to caudal lesions due to the involvement of nucleus ambiguus. Caudal lateral medullary lesions cause vertigo, ataxia, and nystagmus due to vestibular nuclei and cerebellar outflow tract involvement.[5] In our study, the mean age of occurrence was 53.2 years, comparable with a study by Shrestha and Thahseen et al.[6,7] In a study by Shrestha et al the mean age of occurrence was 53.9 years.[6] In a study by Thahseen et al the mean age occurrence was 55.9 years.[7] Among 20 patients, 85% were males, which is comparable with studies done by Shrestha et al.[6] Hypertension was our study's most common comorbid condition associated with LMS, followed by diabetes mellitus and dyslipidemia. Similar results were seen in a study by Takuya et al. in Japan, where hypertension was present in 89% cases.[8] Our patients' most common clinical complaints were unsteadiness while walking/ataxia; it was present in 95% of cases. In a Sacco Ralphel et al study, ataxia was present in 70% cases.[9] Similarly, Thahseen et al study showed that ataxia was a universal complaint.[7] The most common sensory pattern observed was a classical pattern with loss of sensation in the ipsilateral face and contralateral body, which was seen in 45% of cases. Loss of sensation in the ipsilateral face only was seen in 30% of cases. In a Fukuoka Takuya et al. study, dissociated sensory loss was seen in 65% cases.[8] In a study by Thahseen et al sensory pattern with loss of sensation in the contralateral face, arm, and leg trunk was common.[7] Our study observed that in patients with a classical pattern of sensory loss, symptoms were severe in the form of instability and bulbar symptoms and required longer recovery. In patients with loss of sensation in the ipsilateral face only, patients had only unsteadiness while walking, with faster recovery. This may be due to an infarct in the extreme dorsolateral position in the medulla. In a study by Shreshta et al patients with classical sensory loss presented with both unsteadiness and dysphagia.[6] Similar results were seen in our study. Loss of sensation in the contralateral face, upper limb, and lower limb was seen in 15% of patients in our case. This is comparable to a study by Sheetal et al where the pseudo thalamic pattern of contralateral hemisensory loss was seen in 13.1% of cases.[10]

Limitations

This study did not do the clinico radiological correlation of clinical symptoms with an exact site of involvement in the lateral medulla.

CONCLUSION

Lateral medullary syndrome is posterior circulation stroke syndrome with a wide spectrum of presentation. It is more common in males and seen in the 50–60-year age group. Hypertension was the most common comorbid condition associated with LMS. Ataxia was the most common presenting symptom. The classical sensory loss was the common sensory pattern observed in LMS, followed by the Stopford type 4 pattern.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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