

# Acute Disturbance of Consciousness as the First Clinical Manifestation of an Elderly Patient with Acute Transverse Myelitis

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**Abstract** Acute transverse myelitis (ATM) is a rare entity in the elderly. This case report summarizes the clinical features and treatment of an elderly patient with ATM. The aim is to be expected to benefit the diagnosis and treatment of ATM in the elderly. A 68-year-old male presented with a 5-hour history of acute loss of consciousness and high fever for one day. The examination showed that pin sensation disappeared below the level of the 8th thoracic spinal segment. The patient had paraplegia, muscle hypotonia, urinary incontinence and the disappearance of limb tendon reflexes. Magnetic resonance image (MRI) scan showed extensive increased T2 signal in the spinal cord from medulla oblongata to the first thoracic spine level. The combination treatment was used with 500mg methylprednisone and immunoglobulin (1g/kg) intravenously. On the 10 days of hospitalization, the muscle strength of limbs was significantly improved. Methylprednisone was taken orally for one month (80 mg/d) and the amount of oral medications was gradually reduced, maintaining for two months after hospital discharge. After three months from hospital discharge, the patient could walk independently and had no sensory disturbances and urinary incontinence. This case highlights the rare presentation of an elderly patient with ATM which experienced acute disturbance of consciousness as the first clinical manifestation. This case also highlights that the prognosis is better under the acute ATM occurrence in the elderly if treated timely.

**Keywords:** acute transverse myelitis, elderly, disturbance of consciousness

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## 1. Introduction

Acute transverse myelitis (ATM) involves a rapid progression of sensory and motor deficits and autonomic dysfunction that are presented by acute inflammation of the spinal cord that damages myelin [1]. Diverse etiology of ATM mainly contains acute infections [2,3,4], autoimmune diseases [5], multiple sclerosis [6,7], neuromyelitis optica [8], vasculitis [9,10], and certain drugs [11,12]. Symptoms of ATM usually begin as a sudden onset of lower back pain, muscle weakness, and/or abnormal sensations below the level of the lesion. ATM can rapidly progress to more severe symptoms, including total paralysis and sensory loss, urinary retention, and loss of bowel control.

The occurrence of ATM is rare in the elderly. The acute onset of coma, as the first clinical manifestations in the elderly patient with ATM, is even more rarely. To date there seems to be no compelling literature to guide assessment and treatment of the elderly patient with ATM. As a result of the scarcity of ATM with acute disturbance of consciousness as the first clinical manifestations in the elderly, correct diagnosis can't be reached timely, and

misdiagnosis easily takes place and often causes delays in proper treatment. Although some elderly patients may have a restoration from ATM with minor or no residual problems, more others still lose ability to perform daily living. In this report, we present and discuss the clinical assessment and treatment of an elderly patient with ATM with acute disturbance of consciousness as the first clinical manifestation.

## 2. Case Report

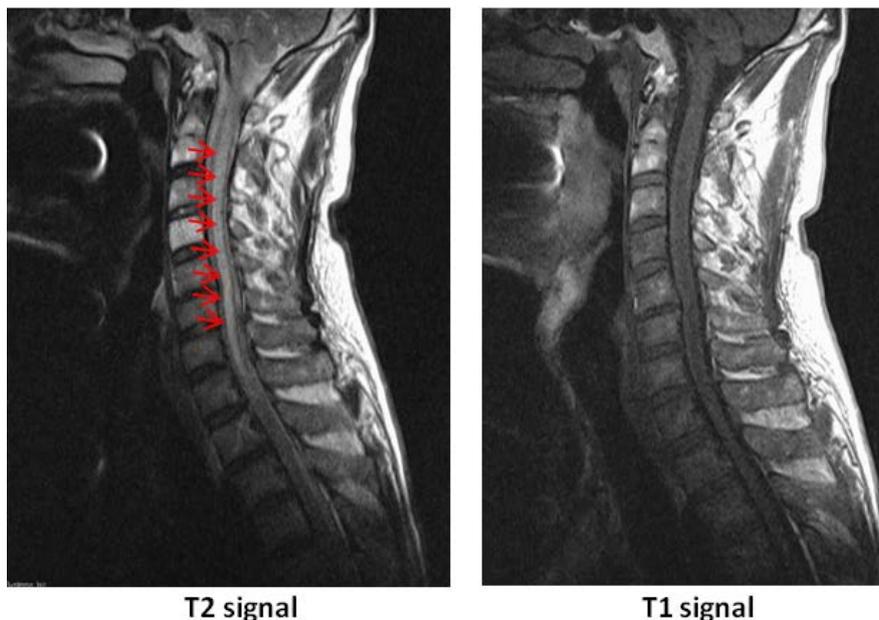
A 68-year-old male presented at the Emergency Department at the Lu'an Affiliated Hospital of Anhui Medical University with a 5-hour history of acute loss of consciousness. On the day before loss of consciousness, sudden high fever occurred for one day in the elderly male, and the body temperature was more than 39°C. He had been treated by an emergency physician with anti-infection and anti-inflammatories immediately. Blood gas analysis was also executed and the results indicated the diagnosis of pulmonary encephalopathy while the value of pH was 7.148, pCO<sub>2</sub> 87.8 mmHg, pO<sub>2</sub> 132 mmHg, HCO<sub>3</sub> 30.4 mmol/l and TCO<sub>3</sub> 33mmol/l. Thus respiratory stimulants were utilized to relieve carbon

dioxide retention. The patient was gradually recovered during 5 hour disturbance of consciousness. At this time the examination showed that mental status and cranial nerves were normal. Pin sensation disappeared below the level of the 8th thoracic spinal segment. The patient had grade zero for limb muscle strength, muscle hypotonia, urinary incontinence and the disappearance of limb tendon reflexes. He is absent from proprioception in both his right and left limbs. Anal sphincter tone was diminished. Following with magnetic resonance image (MRI) scan, extensive increased T2 signal was legible in the spinal cord from medulla oblongata to the first thoracic spine level (Figure 1). A diagnosis of ATM was clear and the patient was transferred into the neurology ward. Instantly the combination treatment was commenced on a 7-day course of 500mg methylprednisone and immunoglobulin (1 g/kg) intravenously.

In the neurology ward blood gas analysis was checked, and the results was within the normal range, including pH 7.328, pCO<sub>2</sub> 56.5 mmHg, pO<sub>2</sub> 58 mmHg, HCO<sub>3</sub> 29.6mmol/l, TCO<sub>3</sub> 31mmol/l and SPO<sub>2</sub> 87%. Blood test showed neutrophil  $7.4 \times 10^9/l$  and percentage 89.1%, indicating that the patient suffered from a bacterial infection history. Cerebrospinal fluid (CSF) analysis

presented normal, including CSF India ink smear and fungal culture, acid-fast bacilli smear and tuberculosis culture, and bacterial culture. The electrolytes and other chemical elements were also within normal limits.

The dysfunction of muscle strength, severe sensory deficit, incontinence and difficulty breathing were gradually improved after the combination therapy with intravenous methylprednisone and immunoglobulin. On the 10 days of hospitalization, the muscle strength of upper limbs returned to normal, and the muscle strength of lower extremity grade two. Then the patient terminated hospitalization. Methylprednisone was taken orally for one month (80 mg/d) and the amount of oral medications was gradually reduced, maintaining for two months after hospital discharge. After three months from hospital discharge, the patient could walk independently and had no sensory disturbances and urinary incontinence. The patient had no history of hypertension, hyperlipidemia, obesity, or diabetes mellitus. A history of smoking is more than 40 years (20 cigarettes/d), and drinking 500g/d for more than 25 years. The report was approved for this case report by the research ethics board of the Lu'an Affiliated Hospital of Anhui Medical University, Lu'an, China. Written informed consent was obtained from the participant.



**Figure 1. The examination of MRI scan.** The MRI scan manifested extensive increased T2 signal in the spinal cord from medulla oblongata to the first thoracic spine level, while T1 signal was no change

### 3. Discussion

Autoimmune diseases, demyelinating disorders, infections, and drugs can induce the occurrence of inflammation in spinal cord segments, causing ATM, which may progress to complete transverse sensorimotor myelopathy [13,14]. It is possible that ATM can be triggered by a variety of viral and bacterial infections [15]. However, most cases of ATM are idiopathic, which means the cause is unidentified or unknown. In this report the ATM patient may suffer from viral or bacterial infection according to the manifestations of high fever and the result of blood analysis in etiology.

Based on only a few studies in the United States, European, and Israeli populations, a peak in incidence rates of ATM appears to occur between 10-19 -and 30-39 years. The incidence of ATM of all causes ranges from 1.34 to 4.6 per million per year [16,17]. The age standardized annual incidence of ATM was 24.6 per million, of definite and possible idiopathic ATM was 6.2 per million, and of ATM with brain lesions was 4.7 per million [18]. However, the incidence and population selectivity of ATM in different regions is not well known. Approximately 20% of cases of ATM occur in children [19]. A history of infection prior to ATM was more commonly among younger patients [16,20,21]. It appears to be that there is no furthermore reports about the cases of ATM exist in the elderly. Herein, a 68-year-old male

with ATM has been reported and this case report summarizes the clinical features and treatment of an elderly patient with ATM, presenting loss of consciousness as the first clinical manifestation. It will be expected to benefit the diagnosis and treatment of ATM in the elderly.

The symptoms and signs of ATM mainly include pain in the neck or back, band-like tightness around chest or abdomen, paraplegia, loss of sensation below the lesion segments, urinary retention, and fecal incontinence [22,23,24]. Initially, position and vibration sensation are often missing. Acute loss of consciousness is a usual symptom in acute neurological disorders. When associated with ATM, it is rare, especially as the first clinical manifestation in the elderly. The disorder of consciousness usually means the involvement of intracranial lesions. The brain MRI of the elderly ATM patient had no abnormal signal, indicating that the patient had no occurrence of brain pathology. According to the results of blood gas analysis, pulmonary encephalopathy is the cause for the onset of coma in the elderly patient. Considering that the elderly patient had low physiological compensatory ability [25,26,27], including ventilatory reserve capacity, the ventilation can't be compensated timely in high fever condition to lead to the occurrence of coma that often delay the timely diagnosis of other diseases, like this case. Particularly, careful and complete physical examination is very important and meaningful for the elderly patients with disturbance of consciousness. Moreover, differential diagnosis is extremely significant to pursue an effective treatment for ATM because it was once considered that the elderly patients suffered from Guillain-Barre syndrome until the performance of extensive increased T2 signal by MRI scan.

Prognosis from ATM is variable and determined on the underlying cause [28,29]. Some patients begin to recover from 1 week following onset and may improve in the following years. Other patients may have no signs of recovery, and the worst is recurrence. Anyway, some patients obtain complete recovery if treated timely. Correct diagnosis is also important for treatment and prognosis [19]. The combination treatment with intravenous methylprednisone and immunoglobulin is satisfactory and high efficient in this case while the prognosis of the elderly patient with ATM is near complete recovery. This case implicates that the prognosis is better under the acute ATM occurrence in the elderly if treated timely. Owing to the rare incidence of the elderly ATM, a scientific process for the diagnosis and treatment for the elderly ATM will yet be evidenced by a certain amount of clinical research data.

## 4. Conclusion

A rare case has been reported that a 68-year-old patient with ATM experienced acute disturbance of consciousness as the first clinical manifestation. In etiology the ATM patient may suffer an acute infection in the light of a high fever and the result of blood analysis. This case report summarizes the clinical features and treatment of an elderly patient with ATM. The aim is to be expected to benefit the diagnosis and treatment of ATM in the elderly.

This case also highlights that the prognosis is better under the acute ATM occurrence in the elderly if treated timely.

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## Disclosure

The authors report no conflicts of interest in this work.

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