**Introduction**

- Artificial respiratory support is an important option of respiratory management for amyotrophic lateral sclerosis (ALS).
- By this support the surviving rate of ALS patients had increased\(^1\),\(^2\). Therefore, it has been recognized that most patients occurs brain atrophy after long-term survival.
- We had an opportunity to observe brain computer tomography (CT) of long surviving ALS patients with tracheostomy positive pressure ventilation (TPPV).

**Methods**

- Three ALS patients who underwent CT after more than nearly a decade of the start of TPPV at our hospital were studied.
- Age of onset, initial symptoms, clinical progress, duration of illness, neuroimaging studies were studied from their medical records retrospectively.

**Results**

**Patient 1**
- 71yo Male
- Onset at 59yo by muscle weakness of upper extremities
- TPPV at 62yo
- 12years of duration
- Bedridden nearly TLS
- Followed by a neurologist of our department at in-home care support

**Patient 2**
- 69yo Female
- Onset at 55yo by dysarthria
- TPPV at 58yo
- Bedridden TLS
- Followed by a neurologist of our department at in-home care support
- Died of pneumonia 14 years after onset

**Patient 3**
- 68yo Female
- Onset at 35yo by dysarthria
- TPPV at 38yo
- 33years of duration
- Bedridden
- Able to communicate by eye movement
- Currently inpatient of our hospital

**Conclusions**

- All three patients showed brain atrophy supporting previous reports \(^3\)-\(^4\).
- It is difficult to evaluate whether they developed dementia after TPPV.
- One patient showed a different pattern of atrophy from other two patients.

**References**