Dangerous misalignment of tracheostomy tube in a dystonic patient

Maki Tateyama,1 Tetsuya Akaishi,2 Rina Takano,1 Keiji Chida1

1Department of Neurology, Iwate National Hospital, Ichinoseki, Iwate, Japan
2Department of Neurology, Tohoku University Graduate School of Medicine, Sendai, Miyagi, Japan

Correspondence to Dr Maki Tateyama, mtateyama@iwate-h.com

Accepted 31 March 2015

DESCRIPTION
A 64-year-old woman with multiple system atrophy presented with acute severe dyspnoea. She was bedridden for 4 years because of progressive cerebellar ataxia, parkinsonism and autonomic failure, and had respiratory disturbance. She had undergone tracheostomy 3 years earlier and had recently experienced several episodes of transient dyspnoea.

Passing a suction catheter through her tracheostomy tube was difficult. A CT scan revealed that the curvature of the tracheostomy tube did not align with her trachea. The orifice of the tube was partly obstructed by the anterior wall of trachea, which was pushed by the brachiocephalic artery (figure 1A, B). Furthermore, the tip of the tube was touching the tracheal wall behind the artery (figure 1C). We replaced the tracheostomy tube with one that better matched the shape of the patient’s trachea (figure 1D, E), thus resolving her dyspnoea.

Tracheal injury caused by the tip of tracheostomy tubes is the major cause of tracheoarterial fistula (TAF). Prevention is crucial, because TAF is potentially fatal.1,2 The incidence of TAF is increased in patients with spinal deformity (>10%) vs (<1% those without).1,3 Our patient had scoliosis and dystonic neck posture, which likely changed the topographical relationship between the tracheostomy tube and the brachiocephalic artery. The episodes of dyspnoea alerted us to the ill-fitting tracheostomy tube and the risk of TAF. Multiplanar reconstruction CT images were helpful in evaluating the position of the tracheostomy tubes and the spatial relationship between major arteries and the trachea.3

Learning points
► The spatial relationship between major arteries and the trachea can change in patients with multiple system atrophy who develop scoliosis and dystonic posture. In such patients, the brachiocephalic artery may push against the anterior wall of the trachea, compressing, and thus narrowing, the orifice of the tracheostomy tube and increasing the risk of tracheoarterial fistula (TAF).
► Multiplanar reconstruction CT scans are useful to evaluate the relationship between major arteries, the trachea and the tracheostomy tube, which helps in selecting the appropriate tracheostomy tube to ensure prevention of TAF.

Acknowledgements The authors would like to thank the nursing staff and the radiation department staff for their kind cooperation and support. The authors would like to thank Climson (Enago) Interactive for their English language review.

Competing interests None declared.
Patient consent Obtained.
Provenance and peer review Not commissioned; externally peer reviewed.

Figure 1 Multiplanar reconstruction CT scan showing the relationship between the trachea, the brachiocephalic artery and the tracheostomy tube.
REFERENCES

