Akihiro Suzuki MD PhD
 Takayuki Kunisawa MD PhD
 Hiroshi Iwasaki MD PhD
 Asahikawa Medical College, Hokkaido, Japan
 E-mail: masuikasuzuki@yahoo.co.jp
Accepted for publication July 9, 2007.

References

- 1 Mikuni I, Suzuki A, Takahata O, Fujita S, Otomo S, Iwasaki H. Arytenoid cartilage dislocation caused by a double-lumen endobronchial tube. *Br J Anaesth* 2006; 96: 136–8.
- 2 Shulman GB, Connelly NR. Double lumen tube placement with the Bullard laryngoscope. *Can J Anesth* 1999; 46: 232–4.
- 3 Hagihira S, Takashina M, Mori T, Yoshiya I. One-lung ventilation in patients with difficult airways. *J Cardiothorac Vasc Anesth* 1998; 12: 186–8.
- 4 Suzuki A, Toyama Y, Katsumi N, et al. Pentax-AWS® improves laryngeal view compared to Macintosh blade during laryngoscopy and facilitates easier intubation (Japanese). *Masui* 2007; 56: 464–8.
- 5 Hernandez AA, Wong DH. Using a Glidescope for intubation with a double lumen endotracheal tube. *Can J Anesth* 2005; 52: 658–9.

Neck auscultation: a simple new method for confirming tracheal intubation

To the Editor:

The current gold standards for confirmation of successful tracheal intubation include visualization of the endotracheal tube (ETT) passing through the vocal cords and end-tidal capnography.¹ Mizutani *et al.*² could not distinguish between esophageal and tracheal intubation by auscultation at the suprasternal notch using spectral edge sound frequency analysis. An alternative approach is based on auscultation with a traditional stethoscope diaphragm at the level of the cricoid cartilage in the neck. Initial observations of this clinical sign were made with a Littmann™ Cardiology II SE stethoscope placed adjacent to the cricoid cartilage on the left side of the neck (Figure). The tip of an ETT (Mallinckrodt Hi-Lo®, Tyco Healthcare/Mallinckrodt, Mansfield, CT, USA), upon striking the cricoid cartilage and tracheal rings, produces a classic sound akin to rubbing a pencil along standard plastic corrugated anesthesia tubing. The resulting sound is unique to the architecture and design of the cricoid cartilage and tracheal rings. For years we have utilized the experienced nurse in the operating room, to verify

FIGURE Neck auscultation.

correct passage of an ETT into the trachea during the application of cricoid pressure. The tactile sensation generated when the ETT strikes the cricoid cartilage and subsequent tracheal rings is distinctly audible.

The stethoscope is placed adjacent to the cricoid cartilage on the left side of the neck as shown in the Figure. After tracheal intubation the lubricated ETT, with the balloon deflated, is gently advanced and withdrawn twice over a distance of 1–2 cm, whilst auscultation is performed. This maneuver reproduces the previously described sounds when the trachea has been intubated. Posterior displacement of the ETT in the direction of the hard palate augments the anterior position of the tube tip within the trachea, and hence the sounds generated. Application of cricoid pressure may further augment the sounds originating from the ETT tip striking the anterior cricoid and tracheal cartilages.

This auscultatory method of confirming tracheal tube placement can serve as an additional clinical guide to exclude esophageal intubation. The maneuver may be potentially beneficial in emergency resuscitation outside of the controlled operating room setting, and should be considered whenever doubt exists regarding correct ETT placement.

Chris Christodoulou MBChB FRCPC
 University of Manitoba, Winnipeg, Canada
 E-mail: chrischristodoulou@shaw.ca
Accepted for publication June 17, 2007.

References

- 1 American Society of Anesthesiologists Task Force on

Management of the Difficult Airway. Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology* 2003; 98: 1269–77.

- 2 Mizutani AR, Ozaki G, Benumof JL, Scheller MS. Auscultation cannot distinguish esophageal from tracheal passage of tube. *J Clin Monit* 1991; 7: 232–6.

Lumbar tattoos and lumbar puncture: the emperor's new clothes?

To the Editor:

In western countries, lumbar siting of tattoos has become a trendy location for young women. In 2002, Douglas and Swenerton warned about a theoretical risk of introducing exogenous pigments in the epidural space, after puncturing a tattoo during epidural anesthesia, that would lead to epidermal tumours and/or chemical arachnoiditis.¹ The clinical concerns are quite legitimate: 1) iatrogenic intraspinal epidermoid tumours have been reported after lumbar punctures; 2) epidermal tissue coring has been shown to occur in several studies; 3) the precise composition of tattoo inks remains unknown; and 4) some by-products may have toxic/mutagenic properties under certain circumstances.² The consequences of introducing these pigments into the epidural space are unknown. Therefore, "guidelines" have been proposed: puncturing in a free spot within the tattoo; selecting another free vertebral interspace; nicking the skin before insertion of the needle or avoiding epidural anesthesia.³

While the debate on this issue continues⁴ the anesthesiologist who has to deal with the anxiety of the tattooed parturient is left with considerable uncertainty regarding the risks of performing epidural anesthesia. To date, however, no complication related to tattoo puncture during epidural anesthesia has been reported. We recognize that if there were a complication, clinical manifestations might not be apparent until several years later, as injected cells grow slowly. The carcinogenic potential of tattoo inks is still unclear. Despite the few reported cases of skin cancers associated with tattoos, this association is considered so far coincidental.

The risk of epidermoid tumours is related to tissue coring during puncture, not to tattooing. This complication was described well before tattoos regained popularity and lumbar tattoos became an issue.¹ Every year, thousands of parturients undergo epidural anesthesia without any complications. It is uncertain how many of these patients are informed of a potential risk of "epidermal tumour by tissue coring." Interestingly,

the lumbar tattoo seems to be a matter of concern only for epidural analgesia. No article identifies concerns related to lumbar puncture through a tattoo. Perhaps it is simply a matter of time before neurologists or rheumatologists have to confront this issue too.

Lastly, histological aspects of tattooing provide crucial data.⁵ The pigments, deposited in the epidermis after tattooing are progressively lost, while the superficial epidermal layers peel away. After healing, the epidermis is completely devoid of pigments. Therefore, it is unlikely that "epidermal tissue coring" includes any pigment. In the dermis, most of the pigments are assimilated by macrophages, which migrate to the lymphatics. Retained ink particles are mostly intracellular, located in perivascular macrophages and fibroblasts. If they were entrapped by a needle, the pigments are more likely to be intracellular than free. Thus, the complications will be the result of cellular introduction rather than to the pigment itself. Finally, if the anesthesiologist wishes to avoid entrapping pigments efficiently, he/she will have to perform a skin incision prior to needle insertion.

In conclusion, we believe that the concern of providing epidural analgesia in patients with lumbar tattoos has been overstated. In the absence of documented complications, it may be an appropriate time for anesthesiologists to re-evaluate this relative contraindication to epidural analgesia.

Nicolas Kluger MD*

Jean-Christian Sleth MD†

Bernard Guillot MD*

CHU Montpellier,* Polyclinique Saint-Roch,†
Montpellier, France

No funding received.

E-mail: nicolaskluger@yahoo.fr

Accepted for publication July 19, 2007.

References

- 1 Douglas MJ, Swenerton JE. Epidural anesthesia in three parturients with lumbar tattoos: a review of possible implications. *Can J Anesth* 2002; 49: 1057–60.
- 2 Engel E, Santarelli F, Vasold R, et al. Establishment of an extraction method for the recovery of tattoo pigments from human skin using HPLC diode array detector technology. *Anal Chem* 2006; 78: 6440–7.
- 3 Raynaud L, Mercier FJ, Auroy Y, Benhamou D; SOS ALR. Epidural anaesthesia and lumbar tattoo: what to do? (French). *Ann Fr Anesth Reanim* 2006; 25: 71–3.
- 4 Muddle S. Tattoo or not to do? *Int J Obstet Anesth* 2006; 15: 259–60.
- 5 Sleth JC. Epidural anaesthesia and lumbar tattoo. Histology of tattoo: the missing link? (French). *Ann Fr Anesth Reanim* 2007; 26: 266–7.