Correct site of injection for ultrasound-guided stellate ganglion block: International survey and cadaveric confirmation

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Introduction

- Accurate knowledge of anatomy is a must in order to perform safe and effective cervical sympathetic blockade which is also called "Stellate ganglion block (SGB)".
- However, the site of injection is diverse when ultrasound-guided SGB is performed in clinical practice.
- To find out more about this situation, a survey was conducted regarding the clinical practice in Korea and Japan since these two nations commonly perform this in clinical setting. A cadaver study was conducted in order to confirm an accurate anatomical structure related.

Methods

- We investigated the current clinical practice of US-guided SGB by international survey in Japan and Korea. 206 pain physicians from Korea and 97 from Japan responded to the survey. We analyzed the survey results and compared two countries.
- Twelve halves parts of neck in six cadavers were donated to the Department of Anatomy of Wonkwang University College of Medicine by men and women who had given their written informed consent premortem to use their bodies after death for scientific and educational purposes. We dissected anterior neck to define the exact position of cervical sympathetic ganglion related to prevertebral fascia on C6 level. Correlation to prevertebral fascia was studied on C6 level.

Results

- The survey results are as following. (Figure 1-5).
- Anatomical position of cervical sympathetic chain and prevertebral fascia results are as following (Figure 6, Table 1).

Figure 1. Number of pain physician using ultrasound in SGB, classified by the clinical experience.

Figure 2. Type of the local anesthetics used in SGB.

Figure 3. Volume of the local anesthetics used in ultrasound-guided SGB.

Figure 4. Preferred needle approach technique used in ultrasound-guided SGB.

Figure 5. Final position of needle tip during ultrasound-guided SGB.

Figure 6. Anatomical position of cervical sympathetic chain and prevertebral fascia.

Table 1. Anatomical position of cervical sympathetic chain and prevertebral fascia.

Level of Spine	Over prevertebral fascia	Under prevertebral fascia
C6	100%(n=12)	0%(n=0)
C7	0%(n=0)	100%(n=12)

Conclusion

- Injecting above prevertebral fascia seems to be more effective for performing sympathetic block in C6 level. To be more precise, it should be called middle cervical sympathetic block rather than calling it SGB when performing block in the level of C6.
 - Injecting under the prevertebral fascia should be more effective when performing sympathetic block in C7 level and it can be called exact "SGB".
- A re-definition of what is commonly called SGB is necessary using an accurate anatomical knowledge for pain physician.