The sonoanatomical relation of trunk level of brachial plexus at supraclavicular fossa

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Background and Goal of Study

Supraclavicular brachial plexus block is usually done trunk level of brachial plexus. Understanding of the relation of trunks is important for patient to receive good postoperative pain control. However, there is no article investigated the anatomical relation of trunks. The aim of this study was to investigate the relation of trunks at supraclavicular fossa by ultrasonography.

Materials and Methods

This study was approved by the Ethics Committee of Fukuoka University Hospital. (IRB number: 15-8-06)

One hundred patients scheduled for elective orthopedic surgery were participated in this study. Patients were placed in the supine position, with the head facing away from the side to be observed. The brachial plexus was observed from the level of C5 vertebra to the supraclavicular fossa by ultrasonography.

Distributions of trunks were defined as follow.

Superior trunk derives: C5 and C6 roots
Middle trunk derives: C7 root
Inferior trunk derives: C8 and T1 roots

Location of trunks at supraclavicular fossa were defined as follow.

Group A: Superior, middle and inferior trunks are located from anterior to posterior (Fig. 1)

Group B: Superior and middle trunks are located side by side at anterior area and inferior trunk is located at inferior area (Fig. 2)

Result

The relation of trunks is summarized in table 1. The frequencies of Group A and Group B are 76.5% and 23.5%.

Table 1. The frequencies of Group A and B (%)

	Right	Left	Total
Group A	74	79	76.5
Group B	26	21	23.5

Disucussion

If the catheter tip of supraclavicular brachial plexus block was inserted below sternocleidomastoid muscle and above brachial plexus for shoulder surgery, it is effective for superior trunk and maintained good postoperative pain of Group A. However, if the catheter tip is inserted more inside near the subclavian artery, local anesthetics are only effective to middle trunk and it does not control pain management of Group B. Inferior trunk is located at inferior area both Group A and B. The catheter tip is inserted below the subclavian artery, it is possible to control pain management for ulnar side of arm.

Conclusion

Understanding of the relation of trunks at supraclavicular fossa is important for patient to maintain good postoperative pain control.

References

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Fig.1 The relation of trunks at supraclavicular fossa.Group A is that superior,middle and inferior trunk are located from anterior to posterior.

Fig. 2 The relation of trunks at supraclavicular fossa. Group B is that superior and middle trunk are located side by side at anterior area and inferior trunk is located at inferior area