

Case Report

Anterior Intercostobrachial Nerve Penetrating the Pectoralis Minor or Major Muscle

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Two previously unknown anomalies of the anterior intercostobrachial nerve were described. In one case, the anterior intercostobrachial nerve penetrated the pectoralis minor muscle. In the other case, it penetrated the pectoralis major muscle. In both cases, the anomalous nerve supplied the skin of the upper arm.

Key words: anomalies of intercostobrachial nerve, lateral cutaneous branch of the second intercostal nerve, pectoralis minor muscle, pectoralis major muscle

Lateral cutaneous branches of the intercostal nerves issue the anterior and posterior rami [1]. The anterior and posterior rami of the 2nd intercostal nerve ran in the axilla as the anterior and posterior intercostobrachial nerves, and supply the skin of the axilla and the arm [1, 2]. The posterior intercostobrachial nerve anastomoses into the medial cutaneous nerve of the arm, while the anterior one is independent [1-3]. This paper describes two cases of previously unknown anomalies in which the anterior intercostobrachial nerve penetrates the pectoralis minor or major muscle.

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The anomalies were found in a 79-year-old Japanese male who died in 1998 of gastric cancer (Case A), and in a 83-year-old Japanese female who died in 2000 of heart failure (Case B). These subjects had no history of surgical procedures. They were fixed conventionally by arterial perfusion with 10% formalin, and subsequently dehydrated with 50% ethanol. Dissections were performed

in the 1998 (Case A) and 2000 (Case B) clinical anatomy courses for medical students at Okayama University Medical School.

No marked anomalies were found in the plexus brachialis on either side of these 2 cases. Neither marked anomalies of the subclavian and axillary arteries nor marked anomalies of the pectoralis minor and major muscles were found on either side of either case.

Case A. The anterior intercostobrachial nerve (anterior ramus of the lateral branch of the right 2nd intercostal nerve) ran along the posterior surface of the right pectoralis minor muscle, and penetrated the lower segment of this muscle from the dorsal aspect (Figs. 1A, 1B). It independently (without any anastomosis with other nerves) supplied the skin of upper segments of the right arm from the medial aspect (Fig. 1). It issued no muscular branches.

The posterior branch of the lateral cutaneous branch of the 2nd intercostal nerve (posterior intercostobrachial nerve) was well developed, and anastomosed into the medial cutaneous nerve of the arm.

Case B. The anterior intercostobrachial nerve (anterior ramus of the lateral branch of the left 2nd

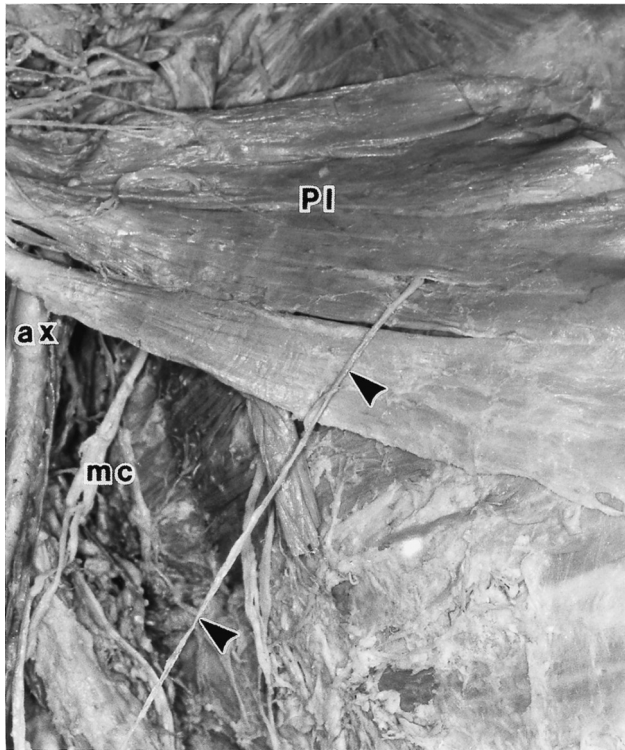


Fig. 1A An anomalous anterior intercostobrachial nerve (large arrowheads) penetrating the pectoralis minor muscle (PI). ax, axillary artery; mc, medial cutaneous nerve of the arm.

intercostal nerve) ran along the dorsal surfaces of the left pectoralis minor and pectoralis major muscles, and penetrated the lateral and lower segment of the left pectoralis major muscle (Figs. 2A, 2B). After penetrating the pectoralis major muscle, it independently supplied the skin of upper segment of left arm from the anterior aspect (Fig. 2A). It issued no muscular twigs.

The posterior ramus of the lateral cutaneous branch (posterior intercostobrachial nerve) was independent. Thus, no anastomosis of this ramus with the medial cutaneous nerve of the arm was formed.

Discussion

Our findings presented herein prove that the anterior and posterior intercostobrachial nerves supply the skin of the medial segments of the arm. It further shows that on rare occasions, the anterior intercostobrachial nerve penetrates the pectoralis minor or major muscle. Some authors have studied the branching or distribution patterns of intercostal nerves, including their lateral cutaneous branches or intercostobrachial nerves [2-8]. However,

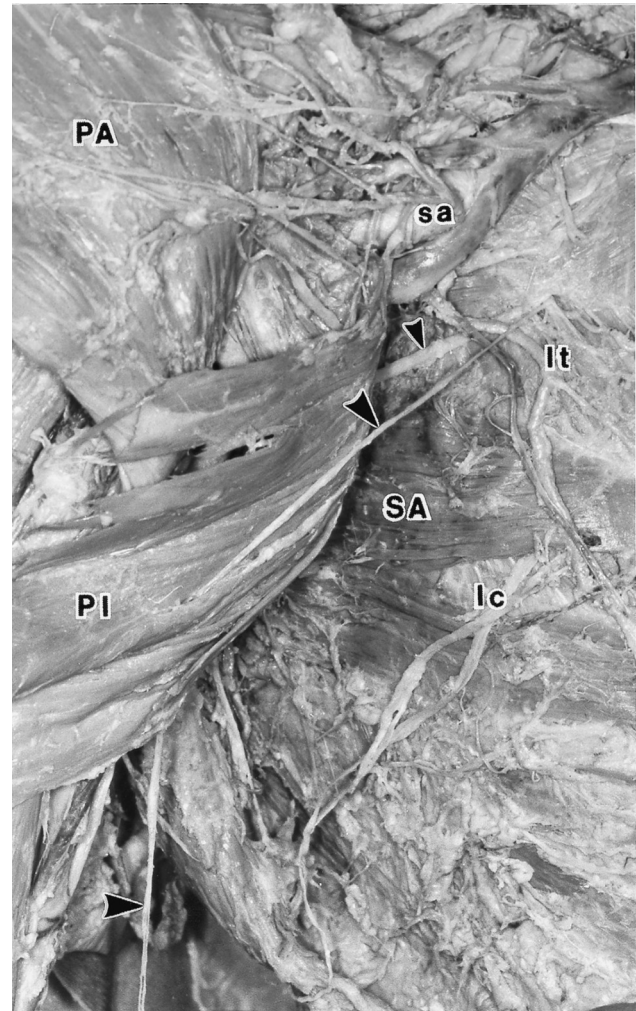


Fig. 1B A further dissected form of Fig. 1A. It can be clearly observed that the anomalous anterior intercostobrachial nerve (large arrowheads) penetrates the pectoralis minor muscle (PI). Small arrowhead indicates the posterior intercostobrachial nerve. PA, pectoralis major muscle; SA, serratus anterior muscle; Ic, lateral cutaneous branch of the 3rd intercostal nerve; It, lateral thoracic artery; sa, subclavian artery.

to our knowledge, there has been no previous report of such an anomalous anterior intercostobrachial nerve penetrating the pectoralis minor or major muscle.

In both cases presented herein, the pectoralis minor and major muscles were fully developed, showing no anomalies. Thus, morphological significance of the here described unusual cutaneous nerves penetrating the pectoralis minor or major muscle is unknown. Clinically, knowledge of such unusual nerve may be useful in surgery

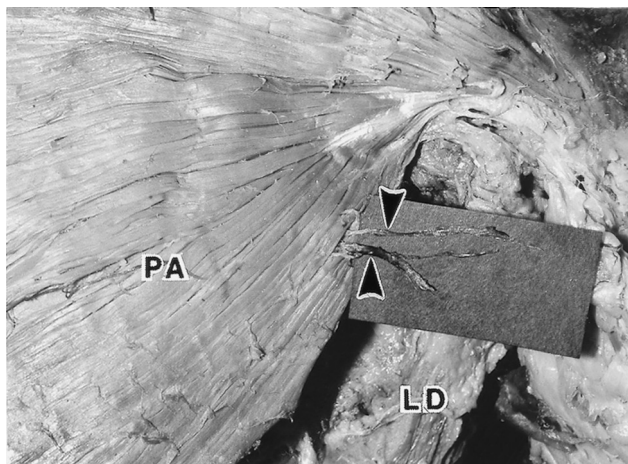


Fig. 2A Another anomalous anterior intercostobrachial nerve (large arrowheads) penetrating the pectoralis major muscle (PA). LD, latissimus dorsi muscle.

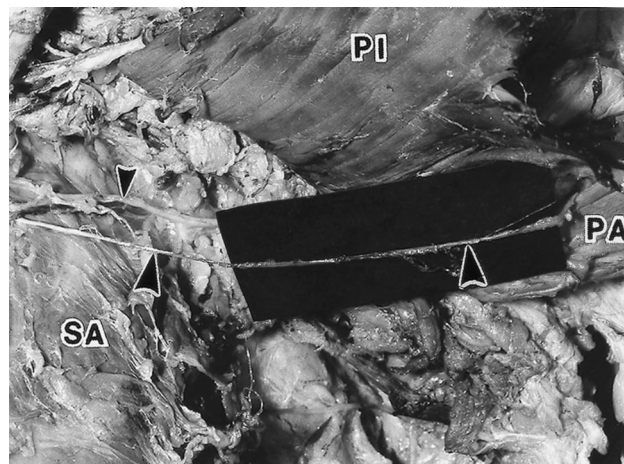


Fig. 2B A further dissected form of Fig. 2A. It is clearly observed that the anomalous anterior intercostobrachial nerve (large arrowheads) runs along the dorsal surface of the pectoralis minor muscle (PI), and penetrates the pectoralis major muscle (PA). Small arrowhead indicates the posterior intercostobrachial nerve. SA, serratus anterior muscle.

involving the axilla, such an axillary lymphadenectomy [9].

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