The Histological Study of Accessory Tragus: A Comparison of Vertical Sections with Transverse Sections

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Background **: Accessory tragi contain a central core of cartilage, which is the most important pathological factor, but often are misdiagnosed as soft fibroma/hair follicle nevi if sections cannot show a central core of cartilage.**

Objectives **: The purposes of this study were aimed at comparing transverse sections with vertical sections and demonstrating the value of transverse sections about histological diagnosis for accessory tragus.**

Methods **: We studied 14 cases of patients with accessory tragi. All cases were totally excised and all 16 biopsy specimens(bilateral in 2 cases) were obtained. We classified these biopsy specimens into two groups regarding the removal of cartilage. All specimens were vertical or transverse seiral sectioned and we compared these histologic findings with established histologic diagnostic criteria which Satoh et al. reported.**

Results **: On the specimens of group 1 in which there was cartilage, subcutaneous prominent connective tissue framework whirling around cartilage could be observed on all transverse sections, but was not always present on vertical sections. Prominent connective tissue framework and pilosebaceous units with circular arrangement of eccrine glands were simultaneously in the center of transverse sections regardless of the presence of cartilage.**

Conclusions **: In this study, transverse sections showed all diagnostic histologic important features for accessory tragus: presence of central cartilage, prominent subcutaneous connective tissue framework, and various degree of pilosebaceous unit, especially with circular arrangement of eccrine glands. So transverse sectioning could be a useful method for accurate histological diagnosis of accessory tragi regardless of the removal of cartilage when doing excisional biopsy. (Ann Dermatol 12(3) 160~164, 2000).**

Key Words : Accessory tragi, Transverse sections

Accessory tragus is an uncommon embryologic developmental anomaly. It appears at birth as solitary or multiple nodules located between the pretragal and sternoclavicular area[1-5]. The diagnosis is made by age of onset, site of localization, and affirmative histopathology that reveals a central core of cartilage and pilosebaceous adnexa[2]. But cases without cartilage can be overlooked as skin tags and/or hair-follicle nevi[1-2,4,6-7]. Satoh et al.[4] have reported that the presence of cartilage is not essential for diagnosis; of more importance is the prominent connective tissue framework in the subcutaneous fat. In recent studies, the horizontal sections of skin biopsies in certain lesions such as the scalp provide more diagnostic and suitable information than vertical sections[8-11]. Based on examination of accessory tragi from 16 biopsy specimens of 14 patients containing 2 bilateral cases, we compared transverse sections with vertical sections about histological diagnosis for accessory tragi.

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MATERIALS AND METHODS

We studied 14 cases of accessory tragi. All cases appeared at birth as solitary or bilateral (2 cases) pretragal nodules, and an initial clinical diagnosis of accessory tragus could be made considering age of onset and location(Fig. 1). All cases were totally excised and all 16 biopsy specimens were obtained. We classified these biopsy specimens into two groups, ie. group 1 in which cartilage was removed from underlying skin when doing exisional biopy, so with cartilage contained in biopsy specimen and group 2 in which cartilage was not removed(Fig. 2). Thirteen specimens had been vertical serial sectioned and paraffin-embedded, so we reconstructed them to transverse sections. The three other specimens were initially transverse serial sectioned. All were stained with hematoxylin and eosin. We compared these histologic findings with established histologic diagnostic criteria which Satoh et al.[4] reported for accessory tragus.

Fig. 1. Clinical appearance of accessory tragus.

RESULTS

The overall configuration was a sessile or a pedunculated polyp. The stratum corneum was usually thin and compact and the granular layer varied from one to four cell layers in thickness. Acanthosis, exocytosis, and spongiosis were rarely prominent.

On the specimens of group 1 in which there was cartilage, both vertical and transverse sections showed a presence of cartilage, as was expected. Subcutaneous prominent connective tissue framework whirling around cartilage could be observed on all transverse sections, but was not always present on vertical sections (Fig. 3a,b). On the specimens of group 2 in which there wasn't cartilage, which is unlikely on the vertical section, prominent connective tissue framework and pilosebaceous units with circular arrangement of eccrine glands were simultaneously in the center of transverse sections (Fig. 4a,b). The comparable histological features are summarized in Table 1.

DISCUSSION

A technique for transverse sectioning was recently described by Frishberg et al[8,10]. Transverse sectioning is the preferred technique in the histological diagnosis of a variety of hair diseases because it can theoretically sample every follicle within a biopsy plug[8-11]. Histological features of ac-

Fig. 2. Schematic diagram of biopsy specimen in group 1(left side) and 2 showing multidirectional sections (vertical and transverse).

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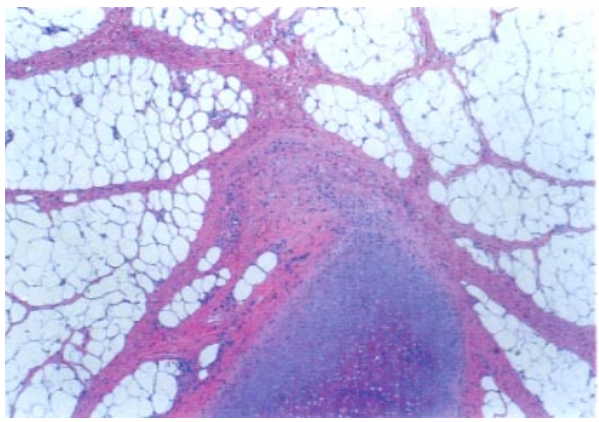

Fig. 3a. Vertical section; Accessory tragus with presence of cartilage (H&E, ×40).

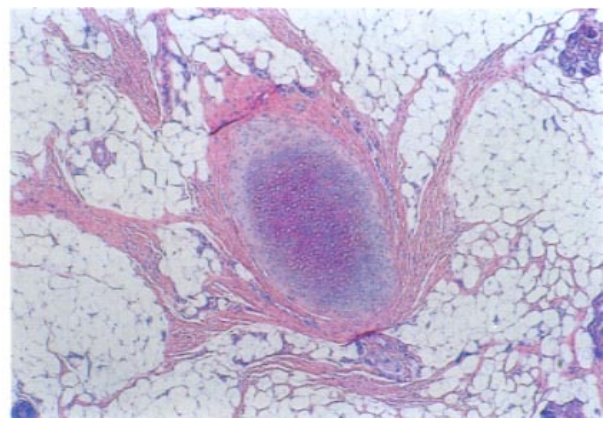

Fig. 3b. Transverse section; Presence of central core of cartilage (H&E, ×40).

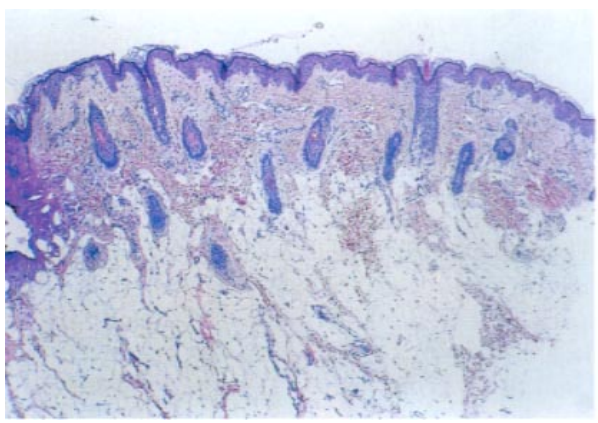

Fig. 4a. Vertical section ; Prominent proliferation of collagen fibers but no cartilage and no increased number of eccrine glands (H&E, ×40).

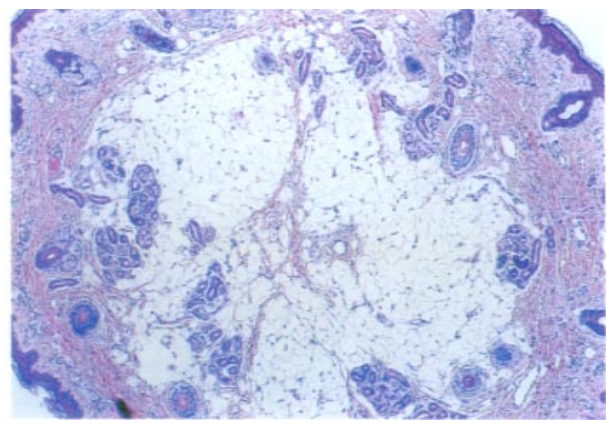

Fig. 4b. Transverse section; Increased number of eccrine glands and pilosebaceous units are distributed around the central prominent connetive tissue framework (H&E, ×40).

cessory tragus in vertical sections were characterized by pilosebaceous adnexa with numerous telogen follicles, abundant lobules of fat, and a central core of cartilage[1,2]. But in most practical cases, the presence of cartilage is not always central, and when doing excisional biopsy for histological diagnosis, cartilage could not be removed from underlying skin tissue. That could be why if these biopsy specimens are used for diagnosis by vertical sections, as is, and there is no central core of cartilage, accessory tragi can be overlooked as skin tags, fibromas, and hair-follicle nevi[4,6-7]. Recently Satoh et al.[4] reported that the more prominent connective tissue framework with numerous tiny mature hair follicles were invariable and characteristic features in accessory tragi, and Ban et al.[7] suggested that the number of fat cells in the nodule or papule differs between accessory tragi and hair-follicle nevi. Based on these findings and three-dimensional structure of accessory tragi, we used the transverse sectioning, which could provide more histological diagnostic features for some cutaneous diseases, to compare the histological findings for diagnosis of accessory tragus with conventional vertical sections.

Because the presence of cartilage in specimens is determined by biopsy procedures, we classified our biopsy specimens into two groups, ie. group 1 in which cartilage was removed from underlying skin when doing exisional biopy and group 2 in which cartilage was not removed. On the specimens of group 1, the subcutaneous connective tissue

Table 1. Comparable clinical data and histological findings (group 1 vs group 2 and vertical vs transverse sections)

Case No.	Sex/age*	Histological findings					
Group 1		Presence of cartilage		Prominent connective tissue framework in the subcutaneous fat		Pilosebaceous unit	
		V**	T***	V	T	V	T
1	M/1	+	+	+	+	+	+
2	F/1	+	+	+	+	-	-
3	M/1	NA****	+	NA	+	NA	+
4 Right	M/2	+	+	-	+	+	+
Left		+	+	-	+	-	-
5	F/2	+	+	+	+	+	+
6	F/2	+	+	+	+	+	+
7	F/5	NA	+	NA	+	NA	+
8	M/1	+	+	-	+	-	-
9	F/4	+	+	+	+	+	+
Group2		Presence of cartilage		Prominent connective tissue framework in the subcutaneous fat		Pilosebaceous unit with circular eccrine glands arrangement	
10	M/21	-	-	-	+		+
11 Right	M/3	-	-	+	+	-	+
Left		-	-	+	+	-	+
12	F/4	-	-	+	+	-	+
13	M/5	NA	-	NA	+	NA	+
14	M/8	-	-	+	+	-	+

* M : male, F: female, ** V : vertical sections ***T : transverse sections
**** NA : Data not available
Group 1 : specimens in which cartilage was contained
Group 2 : specimens in which cartilage was not contained
Case 3, 7, 13 : initially transverse serial sectioned
Case 4, 11 : bilateral lesion of accessory tragi

framework whirling around cartilage and numerous tiny mature hair follicles could be observed more prominently on transverse sections than on vertical sections. On the specimens of group 2, prominent connective tissue framework and pilosebaceous units with circular arrangement of eccrine glands were simultaneously present on transverse sections and these findings were unlikely to be present on vertical sections, which hasn't been reported in other previous studies. Thus, whenever cartilage was not removed (group 1) or was removed (group 2), transverse sections always showed characteristic findings for histological diagnosis of accessory tragus.

In conclusion, our study demonstrates that transverse sectioning could be a useful method for accurate histological diagnosis of accessory tragi regardless of the removal of cartilage when doing excisional biopsy.

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