Genetical Studies on Skin Diseases

VIII. Hair Nevus

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In 1924, hair nevus was first described by Fessler under the name of congenital hair tumor as one kind of the teratomas and the second was reported by Nomura in authors' clinic (1938). Since that time, the reports of similar cases in Japan were presented by Yamaguchi-Kuroda and Momose (5 cases). The authors experienced recently two cases of hair nevus and studied especially on the condition of the nerves in the tumor with Bielschowsky-Seto's silver impregnation method.

Report of Cases

Case 1. A 16 years old boy. No similar tumor was found in his families. Examination: There were 3 scallionlike soyabean-sized hard tumor on the frontal region of both tragi (two in the right and one in the left side) and their surface was covered by normal skin.

Case 2. A 9 months old male. His mother stated that his paternal grandmother had a similar tumor in the front of her left tragus which was removed in her childhood and that paternal grandmother's mother had also presented soyabean-sized dark tumor on her right upper eyelid. Examination: There was a scallionlike peasized hard tumor on the frontal region of the left tragus and it was covered by normal skin with rosy tone.

Histological findings. The tumors in both cases are solid and decked by the normal epidermis. Extending from subpapillar layer to subcutis numerous hair follicles are found in various forms from eberry bud to fully developed one. Most of them, which situate in stratum reticulare, present variously sized cross sections but regular direction of the length axes. Some of them near the epidermis show the longitudinal section and a few of them reach to the skin surface showing normal downy hair. Other some hair follicles are accompanied by the sebaceous gland. In the other hair roots, several holes are found. These holes are equal to what Fessler described under the name of "Gemeinsame äussere Wurzel-
scheide mehrerer Haare” (Momose, 1949). But all of hair roots have never the arrector pili muscles and no sweat glands are found anywhere. In the second case, the subcutaneous fat tissue is comparatively well developed and the netlike connective tissue penetrates into it. In our first case, the cartilage is found in the deeper part of the tumor. Both cases present no figure of the invation of the epidermis as reported by Fessler.

Examination by Bielschowsky-Seto’s silver impregnation method. The authors observed the relation between the tumor and the nerves with the Bielschowsky-Seto’s silver impregnation method. The nerves are found around the blood vessels or the hair follicles. Many sensible and fein vegetative nerve bundles run parallelly with the course of blood vessels. The nerve bundles along the blood vessels ramify for the hair follicles on this way. The ramified nerve bundles reach to the lower part or the sides of the hair follicles and advance upwards or down around the hair root. Viz. these nerve fibrers run in all directions and sometimes surround semicircularly the hair root. In some cases the nerve fibers look as if they surround circularly all round of the hair root from both sides. Many nerve fibers are generally found in the region between the hair follicle and the sebaceous gland. Even when the relation between the nerves around the hair roots and the blood vessels cannot be found so clearly, the blood vessels can more or less be found around the hair follicles and many nerve bundeles run along them. And then the nerve bundles around the hair root present the findings as follows. In some cases, a ramified nerve bundle reaches to the centre of the hair root. In other cases, some nerve fibers run to the hair root parallelly each other or enter radially from all round of the hair root.

These nerve bundles show no abnormal findings as hypertrophy or fissure and a certain relation between the degree of growth of each hair follicle and the number of nerve bundles around it can’t be recognized.

**Comment**

Hair nevus has been already discussed by Fessler, Nomura, Yama-guchi-Kuroda and Momose.

The existence of the cartilage in the tumor was already reported by both Fessler and Momose. The similar finding was found also in our first case. The sweat glands which had been found in the cases by Fessler and Nomura were not present in the cases by Momose and us, while the sebaceous glands were seen more or less in all reports. Fessler and Nomura found the slightly developed subcutaneous fat tissue, but Momose did not recognize them. In our second case, the comparatively well developed subcutaneous fat tissue could be found.
The authors could find no reports in the literature in which the relation between the tumor tissue and the nerves was observed. Seto stated the distributional course of the nerves in the head skin as follows. "The nerve bundles in the head skin start from the thick bundles in the aponeurosis as the mixed nerves and run upward in the interlobular connective tissue of the subcutis. First of all, they make the primary nervous plexus in the zone where the sweat glands are situated and this plexus combine with the plexus of the vegetative nerves around the blood vessels. Then they run for the papillary upwards along the arrector pili muscles and make the secondary nervous plexus in the subpapillary. On the way, they give the branches to the hair follicles and these nerve bundles reach to the neuroshell in the follicle neck running horizontally between the arrector pili muscle and the basis of the sebaceous gland, and there ramify to fine fibers. In this part the hair nerve fibers make the end apparatus. On the other hand, the vegetative nerve bundles are rich around the blood vessels and run along them. They are also rich around the sebaceous glands, the hair follicles and the arrector pili muscles." In our two cases, the course and the distribution of the nerve could not be observed in detail as Seto. The neuroshell in the neck of the hair follicle also could not be found. But it is guessed that the area, where the nerve bundles around the hair roots could be found, agreed with the neuroshell described by Seto. Many nerve bundles around or along the blood vessels also could be found. Thus the fact that the nerve bundles are very abundant around the hair follicles was recognized.

Prinz described that the development of hair nevus is based on the abnormal growth of the epidermis as the invasion of the epidermis reported by Fessler. But no figure as he described could be recognized in our two cases.

Ito stated as follows: "The inheritance on the supernumerary ears or the cartilaginous nevus was recognized by Siemens, Thomas, Rohrer, Hunt, Brander, Jenkins, Teveli, Miller & Miller, Ono, Hara, etc. Then it was able to presume that the hair nevus also is inheritable, although there had had no favorable report." In second case the grandmother was removed from the scallionlike soyabean-sized tumor in her childhood, and it gives some sugestion to Itô's presumption.

**SUMMARY**

Two cases of hair nevus were reported. The authors studied them chiefly with Bielschowsky-Seto's silver impregnation method. The fact that the hair follicles were usually accompanied by the nerve bundles was clearly recognized.

Furthermore in our second case, the grandmother had a similar
tumor in the front of her left tragus in her childhood.

Thus the authors presumed that hair nevus is not mere invasion of epidermis as reported by Fessler but is the inheritable ectodermal teratom participated by the nervous system.

References

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7) Miller & Miller, Arch. of Dermat., 1949, 60, 601.