

A Solitary Glomangioma : An Immunohistochemical and Electron Microscopic Study

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A 62-year-old man presented with a tender, solitary nodule on the left upper arm. He had no specific family history of the lesion. A biopsy specimen showed various sized irregular vascular lumens in the upper dermis. The vascular walls consisted of an endothelial cell layer and rim of one to three layers of glomus cell nests outside the endothelial cells. The cell nests consisted of round shaped epitheloid cells with relatively uniform round or oval shaped nuclei and pale cytoplasm. These tumor cells were strongly positive for vimentin, and α -smooth muscle actin. On electron microscopic examination, the cytoplasm of these tumor cells contained fine filamentous components and many electron dense bodies were found at the plasma membrane and the cytoplasm. We report a case of a solitary glomus tumor (glomangioma) that showed the histological features of the multiple type of glomus tumor. In addition we describe the results of an immunohistochemical and electron microscopic study.

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Key Words : Glomangioma, Solitary

Glomus tumors are benign tumors that are derived from the arterial segment of the Sequet-Hoyer canal¹. Usually glomus tumors are clinically classified into solitary and multiple types^{1,2}. Glomus tumors are normally found as solitary lesions in adults^{2,3}. The multiple type occurs in only 2.3 percent of cases^{2,3}. Both types have their own typical histological characteristics. We report a case of a solitary glomus tumor (glomangioma) demonstrating the histological features of the multiple type. In addition, we describe the results of an immunohistochemical and electron microscopic study.

CASE REPORT

A 62-year-old Korean man was admitted due to a left basal ganglia hemorrhage and received conservative treatment in the department of neurology. He

was referred to the department of dermatology for the evaluation of a painful solitary nodule on the left upper arm which he had had for three years. There was no specific family history of the lesion. An examination showed a tender, solitary 0.7 cm-sized bluish protruding nodule on the left upper arm (Fig. 1). A Chest roentgenogram, electrocardiogram, complete blood count, urinalysis, blood urea nitrogen, serum creatinine, electrolyte and liver function tests were all within normal limits or negative. A biopsy specimen showed various sized irregular vascular lumens in the upper dermis. The vascular walls consisted of one layer of endothelial cells and were surrounded by one to three layers of glomus cell nests (Fig. 2). The cell nests consisted of round shaped epitheloid cells with relatively uniform round or oval shaped nuclei and pale eosinophilic cytoplasm (Fig. 3). The tumor mass was not encapsulated. These cells were evaluated for the presence of vimentin, desmin, S-100, Ulex europaeus, Factor-VIII related antigen, α -smooth muscle actin, myosin, cytokeratin, carcinoembryonic antigen and collagen IV. These tumor cells were strongly positive for vimentin and α -

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Fig. 1. A solitary, well circumscribed, bluish nodule on the left upper arm.

Fig. 2. The vascular walls consisted of an endothelial cell layer and one to three layers of cell nests(H&E stain, $\times 40$).

Fig. 3. The glomus cell nests consisted of relatively uniform round or oval shaped nuclei and pale cytoplasm(H&E stain, $\times 200$).

Fig. 4. A strong expression of the antivimentin antibody.

smooth muscle actin but were negative for all the other stains (Fig. 4 and 5). Only the endothelial cells were positive for *Ulex europaeus* and Factor VIII related antigen. On electron microscopic examination, the cytoplasm of these tumor cell contained fine filamentous components and many electron dense bodies were found at the plasma membrane and in the cytoplasm (Fig. 6). A total excision was performed and no recurrence was observed.

DISCUSSION

Usually glomus tumors are clinically classified into solitary and multiple types. Each type has typical clinical and histological characteristics^{1,2}. The solitary type is more painful and smaller than the multiple type^{1,4}. Histopathologically, the solitary type of glomus tumor shows many small vascular channels and multiple layers of epitheloid cells¹. The multiple type of glomus tumor shows wide

Fig. 5. A strong expression of the smooth muscle actin antibody.

vascular spaces and one to three layers of glomus cells¹. Clinically, our patient had a solitary glomus tumor but histopathologically, it showed the characteristics of the multiple type of glomus tumor. Solitary glomangioma has been rarely reported.

On immunohistochemical examination, our results were similar to the previous reports in that the tumor cells were positive for vimentin and smooth muscle actin but not for desmin^{5,9}. On electron microscopic examination, the tumor cells normally contained many filaments in the cytoplasm and few electron dense bodies near the plasma membrane and in the cytoplasm¹⁰⁻¹². Our results confirm that this tumor is composed of modified smooth muscle cells. In conclusion, our patient had a solitary glomus tumor that showed the histological features of the multiple type of glomus tumor.

REFERENCES

1. Elder D, Elenitasas R, Jaworsky C, Johnson B : Histopathology of the skin. 8th ed. Philadelphia:JB Lippincott, 1997, pp925-926.
2. Shugart RR, Soule EH, Johnson EW : Glomus tumor. Surg Gynecol Obstet 117:334-340, 1963.
3. Kohout E, Stout AP : The glomus tumor in children. Cancer 14:155, 1961.
4. McEvoy BF, Waldman PM, Tye MJ : Multiple hamartomatous glomus tumors of the skin. Arch Dermatol 104:188-191, 1971.
5. Landthaler M, Braun-Falco O, Eckert F, Stolz W, Dorn M, Wolff HH : Congenital multiple plaque-like glomus tumors. Arch Dermatol 126:1203-1207, 1990.
6. Kaye VM, Dehner LP : Cutaneous glomus tumor : A comparative immunohistochemical study with pseudoangiomatous intradermal melanocytic nevi. Am J Dermatopathol 13(1):2-6, 1991.
7. Hervest WM, Nakayama K, Hornstein OP : glomus tumors of the skin: an immunohistochemical investigation of the expression of marker proteins. Br J Dermatol 124:172-176, 1991.
8. Haupt HM, Stern JB, Berlin SJ : Immunohistochemistry in the differential diagnosis of nodular hidradenoma and glomus tumor. Am J Dermatopathol 14:310-314, 1992.
9. Dervan PA, Tobbias IN, Casey M, O'Loughlin J, O'Brien M : Glomus tumors: an immunohistochemical profile of 11 cases. Histopathology 14:483-491, 1989.
10. Tarnowski WM, Hashimoto K : Multiple glomus tumors An ultrastructural study. J invest Dermatol 52:474-478, 1969.
11. Murad TM, Haam E, Murthy N : Ultrastructure of a hemangiopericytoma and a glomus tumor. Cancer 22:1239-1249, 1968.
12. Tsuneyoshi M, Enjoji M : Glomus tumor A clinico-pathologic and electron microscopic study. Cancer 50:1601-1607, 1982.