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Cellular Leiomyoma of the Nasal Cavity: Report of a Case and Review of Literature

Satoshi Horie, Kensaku Hasegawa* and Tadashi Terada

*Second Department of Pathology, Tottori University Faculty of Medicine, Yonago 683-0826 Japan and *Clinic of Otolaryngology, Public Yoka Hospital, Yoka 667-8555 Japan*

We report a rare case of cellular leiomyoma in the nasal cavity. A 72-year-old Japanese woman was admitted to a hospital. A tumoral lesion was revealed in the left nasal cavity. Angiography showed tumor staining, and the tumor was endoscopically resected after the embolizaion of the feeding artery. At gross inspection, the tumor measured 1.0 × 1.5 × 2.0 cm. Microscopically, the tumor consisted of many spindled cells with blunt ended nuclei. Immunohistochemical examination revealed that the tumor cells were positive for vimentin, alpha smooth muscle actin. We diagnosed this case as cellular leiomyoma. To the best of our knowledge, there have been only 23 reported cases of nasal leiomyoma in English medical literature. We made a brief literature review of the occurrence of this tumor in the nasal cavity.

Key words: cellular leiomyoma; nasal cavity

Leiomyoma is a benign smooth muscle tumor found mainly in the uterus, skin, gastrointestinal tract, deep soft tissues, peritoneum and other sites. Enzinger and Weiss (1995) reported that 95% of leiomyoma (7,748 cases) were located in the female genitalia, 3% in the skin and the remainder in other sites. They are quite unusual in the nasal cavity and paranasal sinuses, and a search of the literature revealed only 23 reports (Maesaka et al., 1966; Ram, 1971; Kotaka and Furuya, 1973; Schwartzman and Schwartzman, 1973; Timirgaleev, 1973; Wholfowitz and Schmaman, 1973; Fu and Perzin, 1975; Nall et al., 1997; MaCaflley et al., 1978; Papavasiliou and Micheaels, 1981; Lijovetzky et al., 1985; Daisley, 1987; Hanna et al., 1988; Harcourt and Gallimore, 1988; Tang and Tse, 1988; Nam et al., 1989; Barr et al., 1990; Ragbeer and Stone, 1990; Sawada, 1990; Van Ingen et al., 1991; Khan et al., 1994; Ardekian et al., 1996; Llorente et al., 1996).

We report the clinical and histological features of a rare case of the intranasal leiomyoma including its immunohistochemistry.

Patient report

Clinical Summary

A 72-year-old Japanese woman was admitted to a hospital with a history of temporal epistaxis. She had no other symptoms such as headache, pain, nasal discharge or anosmia. Her past medical history showed only bronchial asthma. On initial physical examination, a mass measuring 1.0 × 2.0 cm was located on the nasal septum of the left nasal cavity. A computed tomography scan of the head showed a solid mass measuring 0.8 × 1.0 × 2.0 cm in the left nasal cavity (Fig. 1). Angiography revealed tumor stainings (Fig. 2). Selective embolization of the feeding artery was performed. Resection of the tumor by endoscopic nasal surgery was performed. Postoperative recovery was uneventful with the exception of slight bleeding. She was discharged from the hospital, and there has been no recurrence since.

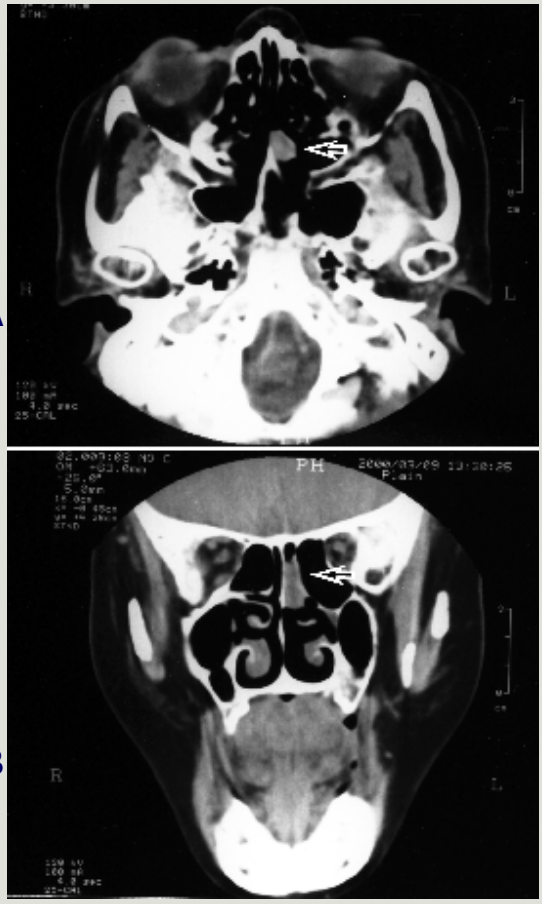

Fig. 1. Computerized tomography sections of axial **(A)** and coronal **(B)** views of the tumor (arrows) seen in the left nasal cavity.

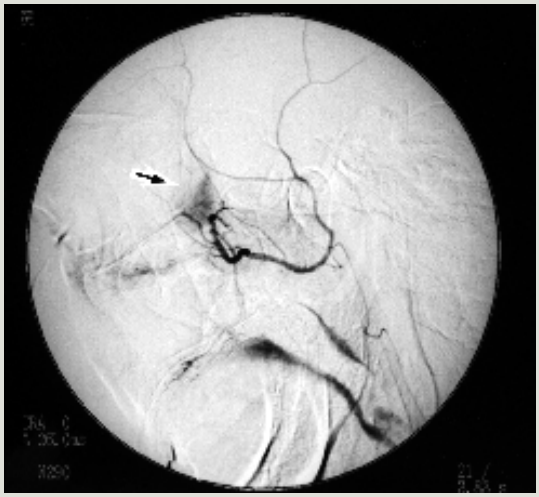

Fig. 2. Preoperative angiography showing tumor stainings (arrow) from a left internal maxillary artery.

Pathologic Findings

On gross examination, the resected specimen consisted of a grayish-pink tissue measuring $1.0 \times 1.5 \times 2.0$ cm. Microscopically, the mass consisted of spindle cells which lay in the submucosa and was partially covered by non-keratinizing stratified squamous epithelium. The cellularity of the tumor was high. The cells had blunt-ended oval nuclei and minimal nuclear pleomorphism (Fig. 3). No mitotic figures were observed.

For confirmation, an immunohistochemical study was performed. The tumor cells were negative for epithelial membrane antigen, cytokeratin, and S-100, but positive for vimentin and alpha smooth muscle actin (Fig. 4).

Discussion

We diagnosed this case as cellular leiomyoma because of its histology and the strongly positive myogenic marker (alpha smooth muscle actin). Differential diagnosis included angiofibroma, epithelioid leiomyoma, hemangiopericyioma and schwannoma. Immunohistochemically, angiofibroma and schwannoma were not probable. Because most of the tumor cells had a spindle shape, showing a fascicular pattern, leiomyoma was probable rather than epithelioid leiomyoma or hemangiopericytoma.

To the best our knowledge, there have been previously only 23 reported cases of leiomyoma involving the nasal cavity and paranasal sinuses (Table 1) (Maesaka et al., 1966; Ram, 1971; Kotaka and Furuya, 1973; Schwartzman and Schwartzman, 1973; Timirgaleev, 1973; Wholfowitz and Schmaman, 1973; Fu and Perzin, 1975; Nall et al., 1997; MaCaflley et al., 1978; Papavasiliou and Micheaels, 1981; Lijovetzky et al., 1985; Daisley, 1987; Hanna et al., 1988; Harcourt and Gallimore, 1988; Tang and Tse, 1988; Nam

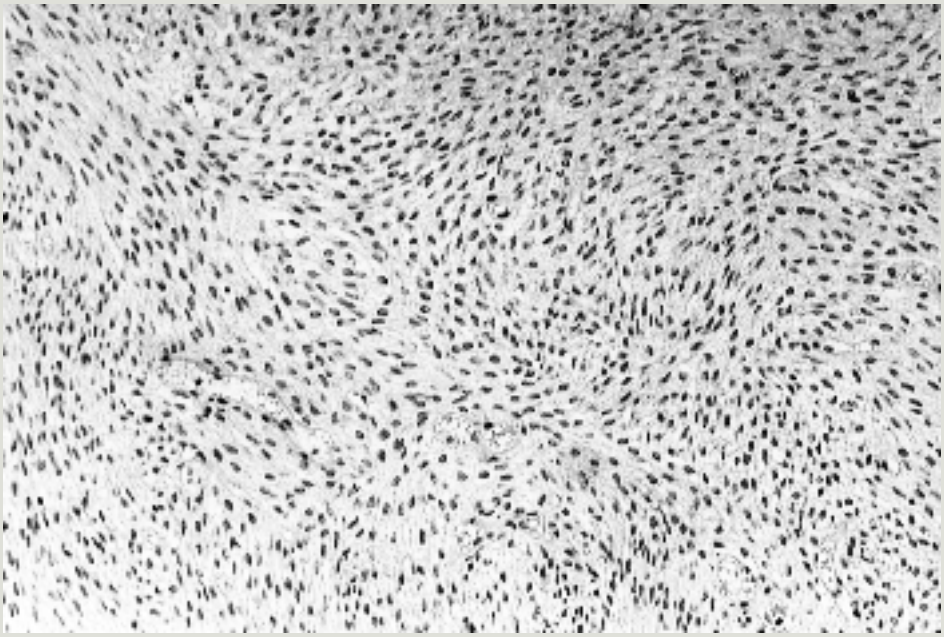

Fig. 3. The tumor cells were composed of spindle cells. Hematoxylin-eosin, original magnification × 200

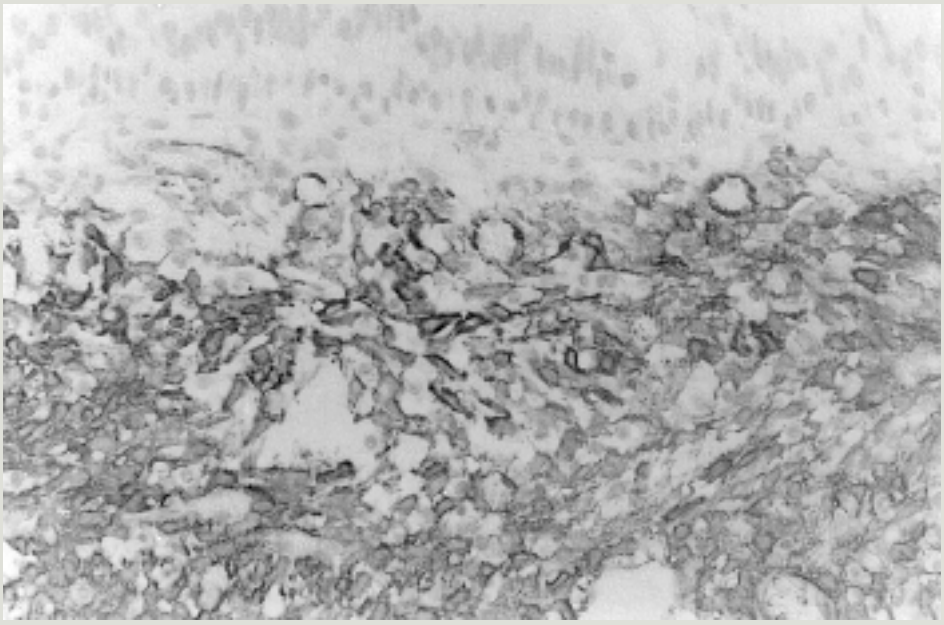

Fig. 4. The tumor cells were diffusely positive for alpha smooth muscle actin. Immunostaining for alpha smooth muscle actin (original magnification × 200).

et al., 1989; Barr et al., 1990; Ragbeer and Stone, 1990; Sawada, 1990; Van Ingen et al., 1991; Khan et al., 1994; Ardekian et al., 1996; Llorente et al., 1996). Therefore, the present case is very rare. The rarity of smooth muscle tumors in the nasal cavity and paranasal sinuses is probably due to the paucity of smooth muscle fibers in this location.

Table 1. Previous cases of leiomyoma of the nasal cabity and paranasal sinuses

	Author(s)	Reference number	Year	Location
1	Maesaka et al.	16	1966	Vestibule
2	Ram	21	1971	Inferior turbinate
3	Schwartzman and Schwartzman	23	1973	Sinuses and nasal fossa
4	Wolfwitz and Schmaman	27	1973	Inferior turbinate
5	Kotaka and Furuya	11	1973	Nasal cavity
6	Timirgaleev	25	1973	Nasal septum
7	Fu and Perzin	6	1975	Nasal cavity
8	McCaffrey et al.	14	1978	Inferior turbinate
9	Papavasiliou and Michaels	19	1981	Middle turbinate
10	Lijovetzky et al.	12	1985	Vestibule
11	Daisley	4	1987	Middle turbinate
12	Tang and Tse	24	1988	Inferior turbinate
13	Hanna et al.	8	1988	Inferior turbinate
14	Nam et al.	18	1988	Vestibule
15	Ragbeer and Stone	20	1990	Nasal floor
16	Sawada	22	1990	Vestibule
17	Barr et al.	2	1990	Nasal septum
18	Van Ingen et al.	26	1991	Choana
19	Harcourt and Gallimore	9	1993	Ethnocide sinus
20	Khan et al.	10	1994	Inferior turbinate
21	Llorente et al.	13	1996	Nasal septum
22	Ardekian et al.	1	1996	Nasal septum
23	Nall et al.	17	1997	Superior turbinate
24	Horie et al.	Present case	2001	Nasal septum

Leiomyomas of the skin and subcutis are usually divided into vascular and nonvascular types. In the nasal cavity, three hypotheses have been given for the origin of smooth muscle tumors: from aberrant undifferentiated mesenchyme; from smooth muscle elements in the wall of blood vessels; or from both sources (Batsakis, 1979). Most of the authors support the idea that the vascular smooth muscle is the origin of the tumor.

In agreement with Barr et al. (1990) and Llorente et al. (1996), we think that the origin of this type of nasal septal leiomyoma is from the smooth muscle component of a blood vessel, because of the absense of the other types of muscle in the septum.

In the present case, the cellularity of the tumor was higher than the usual leiomyoma in other sites. We diagnosed this case as cellular leiomyoma. There have not been any reported cases of cellular leiomyoma of the nasal cavity.

Several stains have been used to identify leiomyoma including desmin, vimentin, Masson's trichrome, actin and myosin (Maeda and Osaki, 1989). In our case, the tumor was strongly positive for alpha smooth muscle actin, supporting the diagnosis of leiomyoma.

The current treatment is surgical resection and there are only a few reports of recurrence in the literature (Hanna et al., 1988; Khan et al., 1994). Because of the vascularity of the lesion in this case, we elected to embolize the feeding vessels prior to surgical resection.

In summary, leiomyomas of the nasal cavity are extremely rare. This case is the 24th reported case in the literature. The exact origin of these tumors is not known, but most agree that the etiology is probably from smooth muscle cells in the walls of blood vessels. Surgical excision of these benign tumors yields high cure rates.

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Corresponding author: Prof. Tadashi Terada