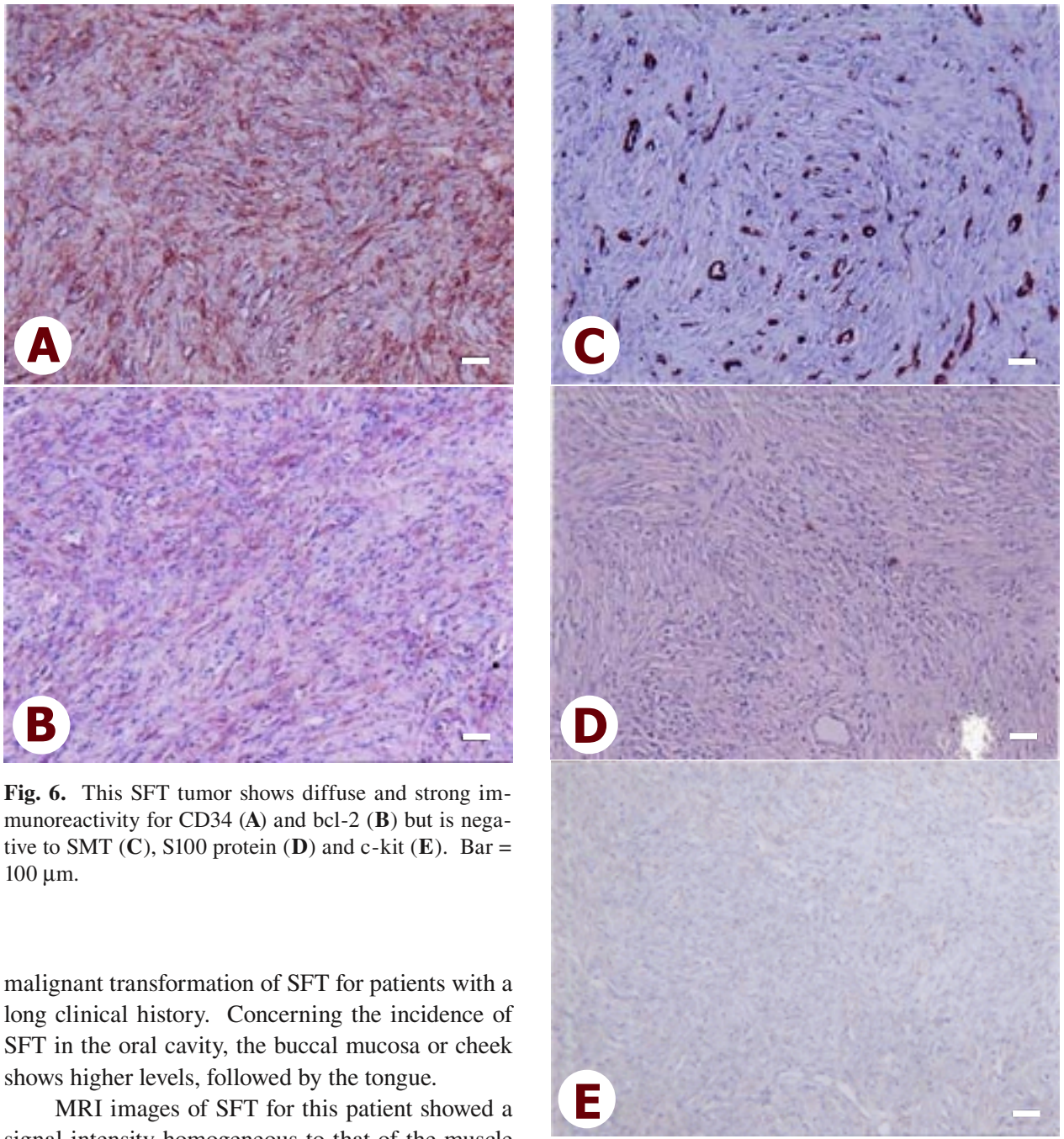

Fig. 6. This SFT tumor shows diffuse and strong immunoreactivity for CD34 (**A**) and bcl-2 (**B**) but is negative to SMT (**C**), S100 protein (**D**) and c-kit (**E**). Bar = 100 μm.

malignant transformation of SFT for patients with a long clinical history. Concerning the incidence of SFT in the oral cavity, the buccal mucosa or cheek shows higher levels, followed by the tongue.

MRI images of SFT for this patient showed a signal intensity homogeneous to that of the muscle on both T1- and T2-weighted images. Likewise, Sato et al. (1998) reported that low signal levels on both T1- and T2-weighted images would be characteristic of SFT. However, even though some reports showed low levels on T1-weighted images, high levels on T2-weighted images were also seen (Yanamoto et al., 2003). We think that the histological diversity of SFT leads to the difference in MRI findings.

Generally, diagnosing SFT is difficult because of its broad range of morphologic characteristics, including storiform, hemangiopericytic, herringbone and palisading areas (Chan, 1997). In the present case, we observed a storiform pattern along with a stag-horn appearance occasionally seen in hemangiopericytoma. Therefore, the current diagnosis of SFT has been based on histologi-

Table 1. Clinical and pathologic features of 39 patients with intraoral SFT

Number	Report		Age (yr)	Sex	Location	Size (mm)	Clinical history	CD34	Vimentin	bcl-2	SMA	Desmin	S-100	Cytokeratin	F-8	ckit
1	Gunhan et al.	1994	55	M	Sublingual gland	30	12 yr	NA	+	NA	NA	–	–	NA	NA	NA
2	Suster et al.	1995	50	F	Soft palate	40	NA	+	+	NA	NA	–	–	NA	–	NA
3	Suster et al.	1995	83	M	Cheek	15	NA	+	+	NA	NA	–	–	NA	–	NA
4	Piatteli et al.	1998	66	F	Tongue	10	1 yr	+	+	+	NA	NA	–	–	–	NA
5	Iwai et al.	1999	27	M	Buccal mucosa	20	5 yr	+	+	NA	NA	NA	–	NA	NA	NA
6	Kurihara et al.	1999	34	F	Buccal mucosa	15	3 yr	+	+	NA	–	–	–	–	–	NA
7	Perez-Ordonez et al.	1999	39	F	Mandible	10	1 mo	+	+	+	NA	–	–	NA	NA	NA
8	Perez-Ordonez et al.	1999	70	M	Buccal mucosa	40	NA	+	+	–	NA	–	–	NA	NA	NA
9	Brunnemann et al.	1999	46	F	Buccal mucosa	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10	Brunnemann et al.	1999	53	M	Oral mucosa	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11	Lukinmaa et al.	2000	56	M	Cheek	20	10 yr	+	+	+	–	NA	–	–	NA	NA
12	Lukinmaa et al.	2000	45	F	Cheek	15	6 mo	+	+	+	–	NA	–	–	NA	NA
13	Lukinmaa et al.	2000	70	M	Cheek	10	6 mo	+	+	+	–	NA	–	–	NA	NA
14	Hirano et al.	2001	64	F	Mental	32	9 yr	+	+	NA	+	–	–	NA	NA	–
15	Kuo et al.	2001	31	M	Infraorbital	40	4 yr	+	+	+	–	NA	–	–	NA	NA
16	Alawi et al.	2001	44	F	Tongue	11	NA	+				NA			NA	NA
17	Alawi et al.	2001	40	M	Buccal mucosa	12	1 yr	+				NA			NA	NA
18	Alawi et al.	2001	55	M	Buccal mucosa	33	3 yr	+				NA			NA	NA
19	Alawi et al.	2001	51	F	Buccal mucosa	40	3 yr	+				NA			NA	NA
20	Alawi et al.	2001	38	F	Buccal mucosa	14	NA	+				NA			NA	NA
21	Alawi et al.	2001	31	F	Buccal mucosa	30	2 yr	+				NA			NA	NA
22	Alawi et al.	2001	61	M	Buccal mucosa	33	2.5 yr	+	+, 13/13†		+, 2/13†	NA		+, 0/5†	NA	NA
23	Alawi et al.	2001	63	M	Buccal mucosa	9	NA	+				NA			NA	NA
24	Alawi et al.	2001	60	F	Buccal mucosa	8	15 yr	+		+, 12/13†		NA	+, 0/10†		NA	NA
25	Alawi et al.	2001	58	F	Buccal mucosa	8	NA	+				NA			NA	NA
26	Alawi et al.	2001	64	F	Lower Lip	13	11 mo	+				NA			NA	NA
27	Alawi et al.	2001	67	F	Buccal mucosa	12	NA	+				NA			NA	NA
28	Alawi et al.	2001	60	M	Buccal mucosa	17	NA	+				NA			NA	NA
29	Alawi et al.	2001	73	F	Buccal mucosa	13	50 yr	+				NA			NA	NA
30	Alawi et al.	2001	48	F	Tongue	8	8 mo	+				NA			NA	NA
31	Alawi et al.	2001	36	M	Lower Lip	8	4 mo	+				NA			NA	NA
32	Shin et al.	2001	46	M	Buccal mucosa	27	1 mo	+	+	NA	NA	–	–	–	NA	NA
33	Harada et al.	2002	32	M	Gingival	10	5 yr	+	+	NA	–	–	–	NA	NA	NA
34	Hardisson et al.	2002	56	F	Cheek	15	2 yr	+	+	+	NA	–	–	NA	–	NA
35	Vargas et al.	2002	20	F	Cheek	30	6 mo	+	+	+	–	–	–	–	NA	NA
36	Vargas et al.	2002	65	F	Tongue	48	15 yr	+	+	+	–	–	–	–	NA	NA
37*	Shnayder et al.	2003	57	F	Tongue	25	25 yr	+	+	+	–	–	–	–	NA	–
38	Yamamoto et al.	2003	32	M	Buccal mucosa	35	1 yr	+	+	+	–	–	–	–	–	NA
39	Tanio et al.	Present	56	M	Buccal mucosa	30	24 mo	+	NA	+	–	NA	–	NA	NA	–

* Case 37 was the only malignant tumor in this series.

† Positive case(s)/examined cases reported in Alawi et al. (2001).

F, female; M, male; mo, month(s); NA, not available; SFT, solitary fibrous tumor; SMA, smooth muscle actin; yr, year(s).

cal and immunohistochemical findings. In 1997, Chan proposed an immunohistochemical profile in which SFT is immunopositive to vimentin, CD34 and bcl-2, but is negative to cytokeratin, von Willebrand factor, SMA and S-100 protein. In 56 pleural and extrapleural SFTs, Suster et al. (1998) showed a close correlation between the expressions of CD34 and bcl-2. The present case and other cases shown in Table 1 were positive to CD34 and bcl-2. Although many reports have emphasized the importance of CD34 in diagnosis of SFT, CD34 immunopositivity is not specific to SFT. Tumors including hemangiopericytoma, neurofibroma, neurilemmoma, angioleiomyoma, gastrointestinal stromal tumor (GIST) and dermatofibrosarcoma protuberans are positive to CD34. Neurofibroma and neurilemmoma are usually positive to S-100 protein, whereas SFT is negative. Dermatofibrosarcoma protuberans is rarely involved in oral soft tissues, but it can be distinguished from SFT by its malignant cytologic features. Also, angioleiomyoma is positive to SMA, where SFT is usually negative. GIST is positive to c-kit. Hemangiopericytoma is probably the most difficult to be distinguished from SFT, because SFT often presents hemangiopericytoma-like areas. Hemangiopericytoma also has immunoactivity for CD34 like SFT. However, hemangio-pericytoma lacks the other morphologic features associated with SFT, such as the storiform pattern, herringbone pattern, neural palisades and thick collagenous stroma. These facts convinced us that we should differentiate this case as SFT.

Diagnosis of SFT is difficult and, although uncommon, it should be contained in the differential diagnosis of oral soft tissue tumors. We reported a rare case of SFT and reviewed 38 cases of intraoral SFT.

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