

# Utility of Immunohistochemical Analysis of CD34 Expression in the Diagnosis of Lesions with Trichilemmal Differentiation

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*To the Editor:*

Immunohistological staining for CD34 may be positive in both benign and malignant tumors<sup>1</sup> with differentiation toward the outer root sheath of the hair follicle (trichilemmal differentiation).<sup>1-3</sup> We have recently confirmed the usefulness of CD34 staining in 2 clinical cases.

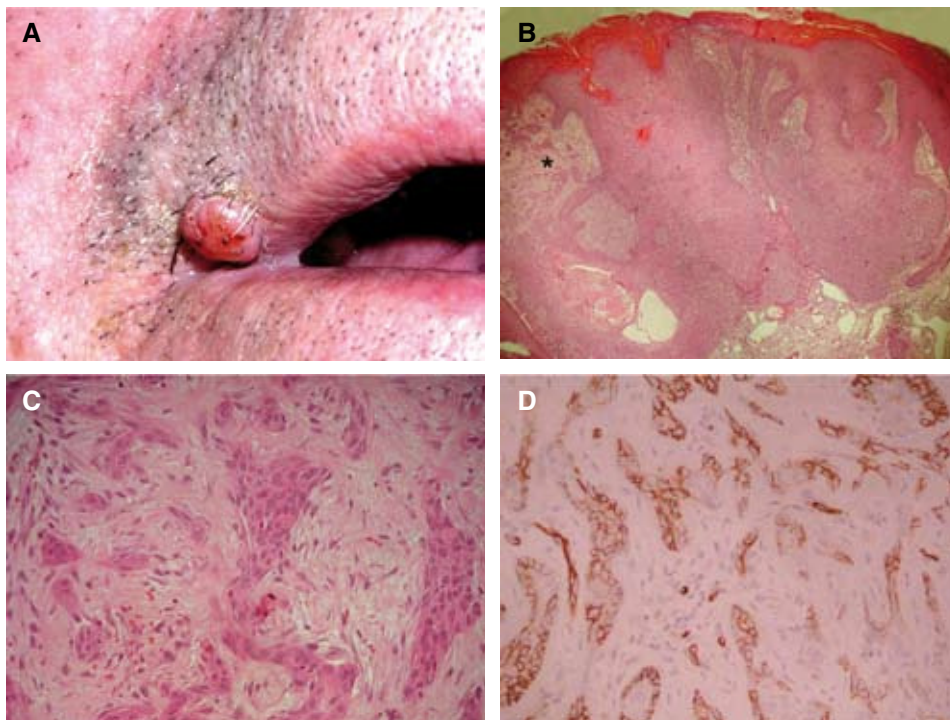
## Case Description 1

A 54-year-old patient was seen for a tumor on the upper lip present for 4 months and clinically compatible with a basal cell carcinoma (Figure 1A). This was surgically removed. Histopathology revealed a clearly defined tumor proliferation composed of lobed formations of cells with clear cytoplasm presenting the typical peripheral palisading of trichilemmoma (Figure 1B). The periphery contained an area of desmoplasia, with small epithelial

cells forming chords and nests, immersed in hyalinized collagen (Figures 1B y 1C). The cell membranes were CD34-positive (Figure 1D) and the lesion was diagnosed as trichilemmoma with desmoplastic areas.

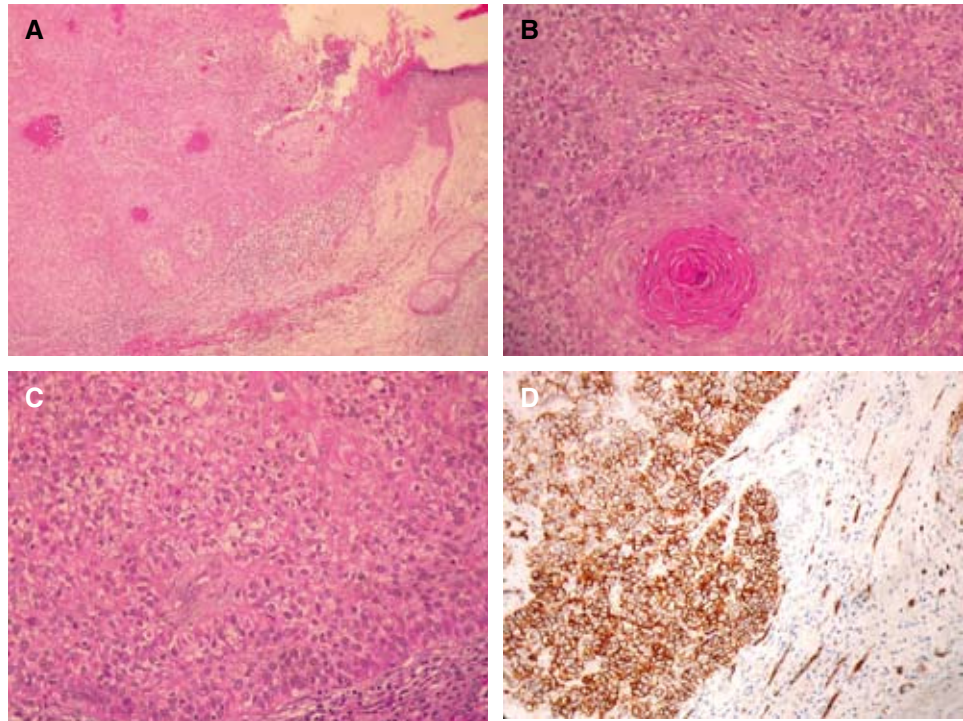
## Case Description 2

An 81-year-old patient had undergone the surgical removal of a nodular lesion on the chest present for 6 months. Histopathological study revealed an endophytic tumor in continuity with the epidermis (Figure 2A). This was made up of cells with a clear cytoplasm showing trichilemmal keratinization (Figures 2A and 2B). An expansive infiltrative growth pattern was observed, surrounded by a thick membrane on the periphery of the lobes (Figure 2C). Nuclear pleomorphism and mitotic figures were also observed (Figures 2B and 2C). CD34 immunostaining was positive in the cell membranes (Figure 2D), and so



**Figure 1.** Nodular tumor lesion on the upper lip clinically compatible with basal cell carcinoma. B. Clearly defined lesion with lobed formations. Peripheral desmoplastic area (\*) (Hematoxylin-eosin,  $\times 40$ ). C. Cells of an epithelial appearance forming chords and nests, in hyalinized collagen. (Hematoxylin-eosin,  $\times 200$ ). D. Positive CD34 staining in the cell membranes (CD34,  $\times 200$ ).

**Figure 2.** A. Endophytic tumor lesion connected to the epidermis. (Hematoxylin-eosin,  $\times 40$ )  
 B. Cells showing clear cytoplasm and trichilemmal keratinization. (Hematoxylin-eosin,  $\times 100$ ).  
 C. Thick membrane deep within the tumor lobes. Clear cells showing nuclear pleomorphism and mitotic figures. (Hematoxylin-eosin,  $\times 200$ ).  
 D. Positive result for CD34 in the cell membranes and the vascular endothelial cells (internal control). (CD34,  $\times 200$ ).



the tumor was diagnosed as trichilemmal carcinoma. The patient died of unrelated causes 8 months after the tumor was removed.

In both cases, positive expression of vascular endothelial growth factor was used as an internal control for the technique.

CD34 staining can be very useful in tumors presenting trichilemmal differentiation,<sup>1</sup> as this facilitates differential diagnosis from other lesions.

Firstly, desmoplastic trichilemmoma can clinically resemble basal cell carcinoma; furthermore, in histological study areas of desmoplasia can simulate squamous cell carcinoma or morpheaform basal cell carcinoma.<sup>4,5</sup> Differential diagnosis from these tumors was easier in the first case than the second as desmoplasia was only really visible in the peripheral area of the tumor whereas desmoplasia is present almost throughout the entire tumor in some cases of desmoplastic trichilemmoma.<sup>4,5</sup>

Trichilemmal carcinoma is a very rare tumor with good prognosis and only exceptional cases of recurrence or metastases<sup>6,7</sup> despite its histological appearance (marked pleomorphism and cell atypia and/or numerous mitoses). It tends to involve well-defined tumors that occasionally have lobes surrounded by a membrane—as in our second case—which could explain the good prognosis for these carcinomas.<sup>6,7</sup> Furthermore, as it tests positive for CD34, we can differentiate trichilemmal carcinoma from other

clear cell carcinomas (including clear cell squamous cell carcinoma or some clear cell adnexal tumors, like sebaceous carcinoma or clear cell porocarcinoma) that could be associated with less favorable prognosis.<sup>8-10</sup>

It would be possible to misdiagnose the second tumor as a squamous cell carcinoma with trichilemmal differentiation, but in such a case CD34 staining would be positive only in the trichilemmal areas and not, as we found, throughout the entire mass. This supports diagnosis of a tumor with differentiation toward the outer root sheath of the hair or trichilemmal differentiation.<sup>2,3</sup>

In summary, we present 2 case descriptions—1 trichilemmoma with desmoplastic areas, and 1 trichilemmal carcinoma—where CD34 staining was a determining factor in differential diagnosis from other potentially more aggressive tumors with a less favorable clinical prognosis.<sup>5,8-10</sup>

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#### Conflicts of Interest

The authors declare no conflicts of interest.

## References

1. Poblet E, Jiménez F. CD34 in human hair follicle. *J Invest Dermatol.* 2003;121:1220-1.
2. González-Guerra E, Requena L, Kutzner H. Estudio inmunohistoquímico de la calretinina en el folículo piloso normal y neoplasias con diferenciación folicular. *Actas Dermosifiliogr.* 2008;99:456-63.
3. Moreno C, Requena C, Requena L. Criterios histopatológicos de diferenciación folicular. In: Requena L, editor. *Neoplasias anexas cutáneas.* Madrid: Aula-Médica Ed; 2004. p. 204.
4. Hunt SJ, Kilzer PB, Santa Cruz D. Desmoplastic trichilemmoma: histologic variant resembling invasive carcinoma. *J Cutan Pathol.* 1990;17:45-52.
5. Illueca C, Monteagudo C, Revert A, Llombart-Bosch A. Diagnostic value of CD34 immunostaining in desmoplastic trichilemmoma. *J Cutan Pathol.* 1998;25:435-9.
6. Wong TY, Suster S. Trichilemmal carcinoma: a clinicopathologic study of 13 cases. *Am J Dermatopathol.* 1994;16:463-73.
7. Garrett AB, Azmi FH, Ogburia KS. Trichilemmal carcinoma: a rare cutaneous malignancy: a report of two cases. *Dermatol Surg.* 2004;30:113-5.
8. Kuo T. Clear cell carcinoma of the skin: A variant of the squamous cell carcinoma that simulates sebaceous carcinoma. *Am J Surg Pathol.* 1980;4:573-83.
9. Martín-Díaz MA, Mayor M, Rubio C, Hernández-Cano N, González-Beato MJ, Casado M. Carcinoma sebáceo extraocular de presentación atípica. *Actas Dermosifiliogr.* 2004;95:586-9.
10. Lan CC, Yu HS, Liao WT, Hsu RC, Chung JC, Tsai KB, et al. Clear cell eccrine porocarcinoma with extensive cutaneous metastasis and peripheral lymphocyte dysfunction. *Br J Dermatol.* 2003;149:1059-63.