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CD13 Expression in Onychomatricoma: Association with Nail Matrix Onychodermis

Chan Seong Park, Ji-Hye Park, Dong-Youn Lee

Department of Dermatology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Dear Editor:

Onychomatricoma is a rare peculiar tumor of the nail unit. It was originally reported to be a benign tumor of the nail matrix as its name implies. However, the terminology onychomatricoma may be a misnomer. Histologically, it is a fibroepithelial tumor consisting of epithelial and mesenchymal components. Thus, the concept of epithelial onychogenic tumor with onychogenic mesenchyme was suggested¹.

Recently, we found the presence of onychodermis of Dongyoun, a specialized mesenchymal cell population below the the nail matrix and proximal nail bed demonstrating CD10 expression². Considering the components and location of onychomatricoma and its CD10 expression, we suggested the relation of onychomatricoma to onychodermis in the nail unit³. In addition, very recently, we demonstrated that stronger CD13 expression was found in the mesenchyme containing onychofibroblasts below the nail matrix compared to that below the

nail bed, suggesting that CD13 may be a marker for onychofibroblasts within nail matrix onychodermis⁴.

In this study, to evaluate CD13 expression in onychomatricoma and further elucidate the association of onychomatricoma with onychodermis in the nail unit we performed CD 13 immunohistochemistry in three onychomatricoma cases (one case was diagnosed at Samsung Medical Center [Fig. 1]. The other two cases were kind gifts from Dr. Robert Baran and from Catholic University Hospital, Seoul, Korea). Immunohistochemical staining was performed using the monoclonal antibody to CD13 (1:50; clone 38C12; Abcam, Cambridge, UK).

H&E staining showed a fibroepithelial tumor with characteristic digitations. The tumor was lined by nail matrix-like epithelium. The tumor cells consisted of spindle shaped nuclei. Immunohistochemically, CD13 was strongly expressed diffusely in dermal portion of onychomatricoma (Fig. 2). CD13 expression was very similar in three onychomatricoma cases.

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Corresponding author: Dong-Youn Lee, Department of Dermatology, Samsung Medical Center, Sungkyunkwan University School of Medicine, 81 Irwon-ro, Gangnam-gu, Seoul 06351, Korea. Tel: 82-2-3410-3543, Fax: 82-2-3410-3869, E-mail: dylee@skku.edu
ORCID: <https://orcid.org/0000-0003-0765-9812>

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Fig. 1. Thick nail plate of right thumb with pronounced longitudinal ridging and yellow discoloration (We received the patient's consent form about publishing all photographic materials).

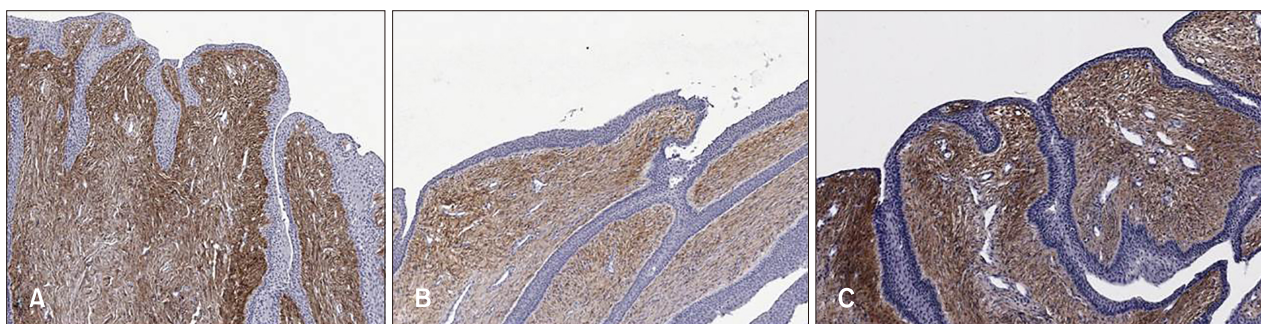


Fig. 2. Immunohistochemical staining of CD13 in onychomatricoma. CD13 was strongly expressed diffusely in the dermal portion of onychomatricoma. (A) Case 1, (B) Case 2, (C) Case 3 (A~C, $\times 100$).

Onychomatricoma is a dermal tumor with nail matrix-like epithelium. It is located around the nail matrix. Based on its histopathology and location, nail matrix onychodermis, which is located below the nail matrix, may be related to the development of the onychomatricoma. According to the previous report, cultured fibroblasts around nail matrix induced hard keratin expression in the non-nail-matrix keratinocytes *in vitro* through epithelial-mesenchymal interactions⁵. This finding suggests that nail matrix onychodermis containing onychofibroblasts may play an important role in nail formation *in vivo* through epithelial-mesenchymal interactions. Thus, nail matrix-like epithelium in onychomatricoma may be induced by mesenchymal tumor occurring in the nail matrix onychodermis. Furthermore, in our cases, CD13, which is known to be expressed at sites of epithelial-mesenchymal interactions and may be a marker of the nail matrix onychofibroblasts, was expressed in the dermal portion of the onychomatricoma. This finding also supports that onychomatricoma may derive from nail matrix onychodermis. In conclusion, CD13 was strongly expressed in all 3 cases of onychomatricoma. Nail matrix onychodermis containing onychofibroblasts may be involved in the histogenesis of onychomatricoma.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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