Immunohistochemical Evaluation of Type IV Collagen Alpha Chains in Oral Malignant Melanoma

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Introduction

The basement membrane (BM) is mainly composed of type IV collagen composed of triple combinations of 6 distinct a chains (α1-α6). Invasive and metastatic melanoma cells form cluster surrounded by BM-like structures. The objective of the study was to determine the immunohistochemical pattern of type IV collagen a chain at the BM-like structures surrounding melanoma clusters.

Materials and methods

Paraffin blocks of human tissues of 1 in situ OMM, 1 invasive OMM, 6 invasive with in situ OMM, 5 metastatic OMM to lymph nodes were sectioned. Type IV collagen α chain specific rat monoclonal antibodies (provided by Dr. Naito and Dr. Sado) were used according to their specific dilutions. AEC chromogen was used to reveal the antigenic sites.

Results

α1, 2, 5 and 6 were constantly detected at the BM of the oral epithelium (Fig.1). α1, 2, 5 and 6 were intermittently detected at the BM of the oral epithelium in in situ OMM (Fig.2). α1 and 2 were intermittently detected at the BM of the oral epithelium while α5 and 6 were negative in early invasive OMM (Fig.3). In invasive OMM, α1 and 2 were constantly detected at the BM-like structures surrounding nodular nests (Fig.4) and were intermittently detected at the BM-like structures surrounding sheet-like nests (Fig.5). The metastatic melanoma cells likewise formed clusters and α1 and 2 were constantly detected at the BM-like structures surrounding nodular nests (Fig.6) while intermittent in sheet-like nests.

Discussion

The gradual loss of type IV collagen α chains at the BM of the oral epithelium is associated with the progression of OMM. Type IV collagen α1 and 2 are more stable compared to α5 and 6. BMs are dynamic structures that are not only degraded but also deposited around melanoma cell clusters and the distribution pattern of type IV collagen a chains varies depending on the architecture of the nest. These suggest that type IV collagen a chains can be significant markers of oral melanocytic progression.

Fig.1

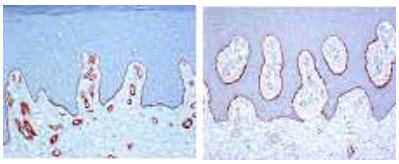

Fig.1 α2 and 5 were constantly detected at the BM of normal oral epithelium.

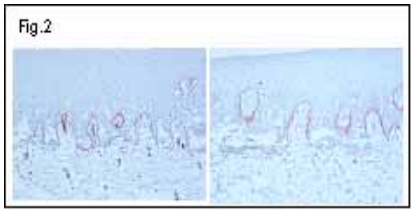

Fig.2 α2 and 5 were intermittently detected at the BM of the oral epithelium in in situ melanoma.

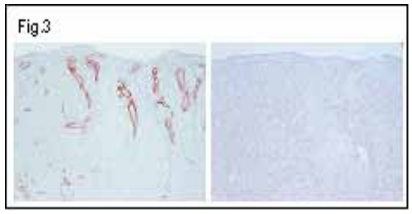

Fig.3 α2 was intermittently detected in early invasive melanoma while α6 was negative.

Fig.4

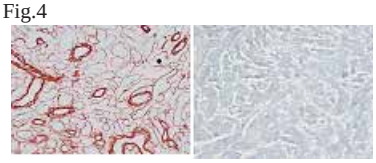

Fig.4 α2 was constantly detected around the nodular nests in invasive melanoma while α5 was negative.

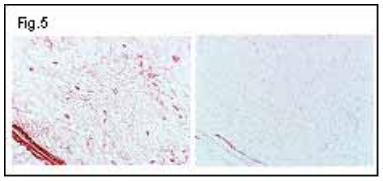

Fig.5 α2 was intermittently detected around sheet-like nests in invasive melanoma while α6 was negative.

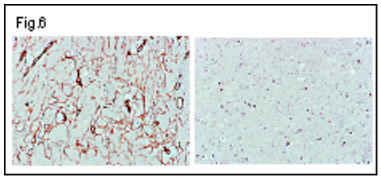

Fig.5 α2 was intermittently detected around sheet-like nests in invasive melanoma while α6 was negative.

Table. Summary of IHC of oral epithelium in different OMM and melanoma nests in invasive and metastatic OMM.

Oral epithelium	α1	α2	α5	α6
Normal	+	+	+	+
In situ OMM	±	±	±	±
Early invasive	±	±	-	-

Melanoma nest	α1	α2	α5	α6
Nodular nest	+	+	-	-
Sheet-like nest	±	±	-	-