Differential expression of basement membrane type IV collagen α chains as a prognostic factor in extrahepatic bile duct carcinoma

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Objective: The destruction of the basement membrane (BM) is the first step in cancer cell invasion and metastasis. Type IV collagen is a major component of the BM, and is composed of six genetically distinct α (IV) chains: α1(IV) to α6 (IV). The loss of α5/6(IV) chains from the epithelial BM at the early stage of cancer cell invasion has been reported in several types of cancers of alimentary tract [1-3]. However, the expression of α5/6(IV) chains in extrahepatic bile duct carcinoma (EBDC) remains unclear.

Methods: The expression of α(IV) chains, p53, and Ki-67 in 36 resected EBDC specimens were immunohistochemically examined.

Results: In EBDC, α5/6(IV) chains disappeared partially or completely earlier than α1/α2(IV) chains around the tubular cancer cells. The expression of α5/6(IV) chains was related to T classification and TNM staging, and inversely with p53 expression, but not with Ki-67 index. The patients with α1/2(IV) chains-negative and α5/6(IV) chains-positive, showed significantly better prognosis than those with α1/2(IV) chains-positive and α5/6(IV) chains-negative.

Conclusions: The loss of α1/2(IV) and α5/6(IV) chains might be a useful prognostic factor in EBDC.

Reference

Crucial effect of ultraviolet radiation on mammalian skin under the Antarctic ozone hole

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Objective: The ozone holes, appearing in Antarctica, cause an increased ultraviolet B (UVB) irradiation. In this research, we examined the qualitative change of bovine skin exposed to UV in Antarctica aiming to elucidate the influence of the ozone holes on the mammalian skin.

Methods: Bovine skin tissues were exposed to sunlight including UV for 25 days at the Syowa station, Antarctica (December (The amount of UV is the maximum); February (There is no ozone hole; as a control against September); September (There is ozone holes)). Collagen was extracted with pepsin from exposed skin and analyzed by SDS-PAGE. In order to examine the damage of exposed skin, collagen fiber was observed by scanning electron microscope (SEM). Moreover, acid soluble collagen (ASC) was irradiated in vitro with UVB lamp. We consider this experiment as a model to understand the influence of UVB on skin collagen.

Results: At all examined seasons, the amounts of collagen extracted from exposed skins apparently decreased compared to that from shaded control skins. However, destruction of collagen fiber was not observed by SEM observation. When ASC was irradiated to UVB in vitro, cross-links between collagen molecules were formed in proportion to the exposure time, and then, cross-linked collagen was gradually degraded. Therefore, it is suggested that the formation of cross-links decreased the amount of solubilized collagen from the exposed skin. Although short wavelength UVB is known to reach the ground in September more than in February and December, higher solubility of collagen was found in the exposed skin in September than that in February. Moreover, collagen was hardly extractable from the skin exposed in December.

Conclusions: These results suggest that the total amount of UVB energy is more effective on the cross-links formation of collagen than the amount of short wavelength UVB due to the presence of ozone holes.