BRIEF COMMUNICATION

CARCINO-EMBRYONIC ANTIGEN (CEA) IN NASOPHARYNGEAL CARCINOMA AND CHRONIC NASOPHARYNGITIS

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When carcino-embryonic antigen (CEA) was discovered in carcinoma of the colon and fetal colon mucosa (Gold and Friedman, 1965), it was thought to be a specific antigen and also a specific marker of human digestive system and its carcinomas. Since then, additional case reports indicated that CEA was also present in carcinoma of various organs such as lung, breast, ovary, uterine cervix, and urinary bladder. Thus far no report has evaluated the nasopharynx, where EBV appears to replicate, or nasopharyngeal carcinoma, which is suspected of being caused by EBV. With the use of the immunoperoxidase method, the presence and the distribution of CEA in nasopharyngeal epithelium in relation to inflammation and carcinomatous change were studied in our laboratory.

MATERIALS AND METHODS

Nasopharyngeal biopsy specimens from 52 cases of chronic nasopharyngitis and 94 cases of untreated nasopharyngeal carcinoma were collected. Tissues were routinely fixed in 10% neutral buffered formalin and paraffin-embedded. 5μ-thick sections were prepared for H&E stain and also for immunohistochemical staining.

The peroxidase-anti-peroxidase (PAP) immunohistochemical staining technique of Sternberger was performed; rabbit anti-human CEA as primary antibody, goat anti-rabbit serum as linking antibody and rabbit peroxidase-antiperoxidase complex as the final step. All reagents and antibodies were supplied by Immulok, CA, USA. Slides were
immersed in 3% hydrogen peroxidase for 5 minutes and also in swine serum for 20 minutes prior to staining procedure. After completion of the immunologic staining, slides were counterstained with Mayer's hematoxylin.

Negative and positive controls were employed. The negative control was performed by substituting nonspecific rabbit serum for the primary antibody. The negative control was always negative. The positive control specimen was an adenocarcinoma of the colon which was strongly positive for anti-CEA antibody with the immunoperoxidase stain.

RESULTS AND DISCUSSION

Distribution of CEA in nasopharyngeal epithelium

Among 52 cases of chronic nasopharyngitis, the nasopharyngeal mucosa of 42 cases was overlined by pseudostratified ciliated columnal epithelium with 15 cases (53.7%) showing a positive CEA reaction. It appeared to be brownish granular or globular in shape and continuous or scattered in distribution more along the distal portion or free end of the epithelial cells. Its close association with inflammation in the nasopharynx was obvious as no CEA was demonstrated in ten biopsies of mild nasopharyngitis but CEA was found more often when inflammation became prominent (15/32 or 46.9%). Similar findings were reported by Goldenberg (1978) on mucosal epithelium of the colon and Jautzke (1982) on mucosal epithelium of the urinary bladder.

Stratified squamous epithelium was found in 21 cases. In the superficial layers of the squamous epithelium, CEA-like material was present along the cell membrane showing a linear or honey-comb appearance, and the cells in the basal layer were spared. It was most likely the keratin or keratin precursor in the squamous epithelial cells that crossreacted with anti-CEA antibody.

Non-specific crossreacting antigen was also present in the cytoplasm of granulocytes, monocytes and macrophages.

Distribution of CEA in NPC

Among 94 cases of NPC, 27 (28.7%) showed a positive reaction. According to our National classification of NPC