A Unique Lesion of the Esophageal Mucosal Epithelium: Low-grade Intraepithelial Neoplasia or Basal-layer-type Squamous Cell Carcinoma?

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According to the 2010 WHO classification of digestive system tumors, esophageal low-grade intraepithelial neoplasia (LGIEN) is associated with ultrastructural and cytological abnormalities confined to the lower half of the epithelium, and squamous cell carcinoma (SCC) is defined as tumor invasion of the lamina propria or penetration into deeper tissue layers. We here reported a rare esophageal squamous lesion with low-grade ultrastructural organization and cytological dysplasia confined to the basal layer, as well as invasion into the lamina propria.

A 64-year-old man underwent upper gastrointestinal endoscopy because of retrosternal discomfort. He had no obvious pain or difficulty in swallowing. Conventional endoscopy detected a lesion of asymmetric leukoplakia with slight reddening of the mucosa in the left side of the esophageal wall at a distance of 25–27 cm from the incisor [Figure 1a]. At an obvious area of leukoplakia, magnifying narrow-band imaging (NBI) endoscopy showed Type B1 intrapapillary capillary loops (IPCLs), demonstrating dilatation, tortuosity, caliber change, and distinct morphology [Figure 1b]. Lugol dye staining visualized the lesion as an unstained area with a clear boundary [Figure 1c]. Magnifying NBI endoscopy suggested that the lesion was an intramucosal carcinoma of IPCL type. The patient was admitted for endoscopic submucosal dissection (ESD) of the lesion at our hospital on October 20, 2015.

Macroscopically, the esophageal mucosal tissue removed by ESD measured 3.6 cm × 2.8 cm × 0.2 cm, with a gray area of erosion in the middle measuring 2.0 cm × 1.8 cm. The mucosal sample was cut into 2 mm sections and stained with hematoxylin and eosin.

Microscopically, there was a clear boundary between the lesion and the normal squamous epithelium [Figure 2a]. Histological examination showed mild dysplasia in the lower half of the squamous epithelium, similar to basal cell hyperplasia, and irregular extension into the lamina propria [Figure 2b and 2c]. There were many small nests with occasional keratin pearls and growth of single cells in the shallow lamina propria [Figure 2d and 2e]. Hyperkeratosis and parakeratosis were seen on the surface of the squamous epithelial lesion. Some lymphocytes were found below these nests of mild atypical squamous cells, which were deep in the lamina propria. We considered it as early carcinoma in the mucous membrane and finally established a diagnosis of basal-layer-type SCC within the mucous membrane.

The patient gradually recovered and previous clinical symptoms disappeared after operation. There was no recurrence and no lymph node enlargement or evidence of distant metastasis during the 18-month follow-up after ESD.

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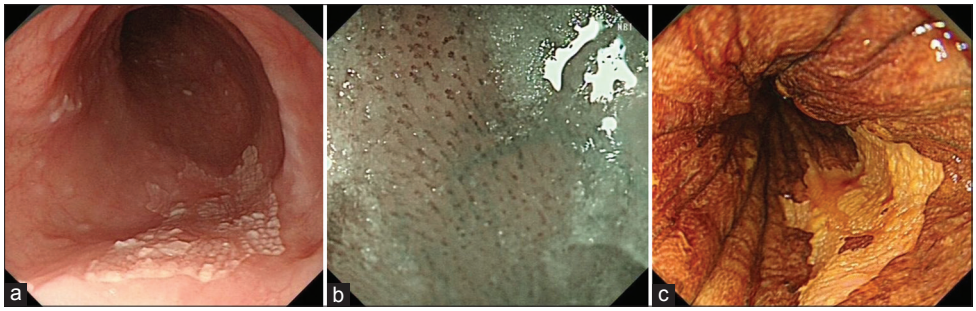

Figure 1: Endoscopic images of basal-layer-type squamous cell carcinoma. (a) Asymmetric leukoplakia and slight red mucosa were detected by conventional endoscopy. (b) Magnifying narrow-band imaging endoscopy showed expansion, tortuosity, and caliber changes as well as different morphologies of the intrapapillary capillary loops. (c) Lugol dye staining visualized a lesion as an unstained area with a clear boundary.

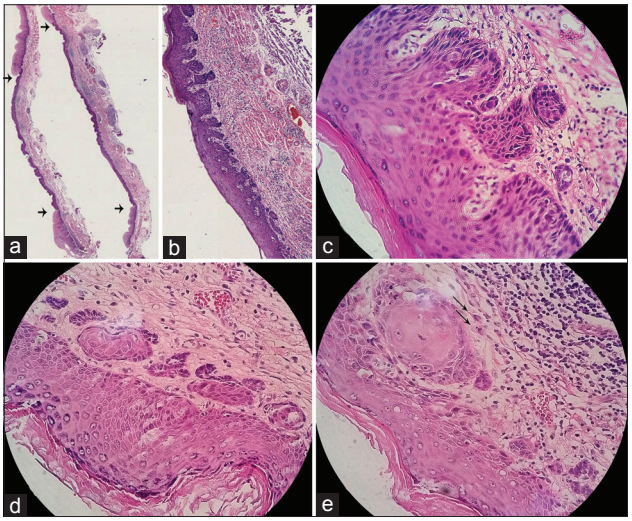

Figure 2: Histopathology of basal-layer-type squamous cell carcinoma. (a) The lesion had a clear boundary around normal squamous epithelium (H and E, original magnification ×40). (b and c) Basal-layer-type squamous cell carcinoma showed mild hyperplasia of basal layer cells, with minimal invasions of the lamina propria at multifocal sites (H and E, b: original magnification ×100, c: original magnification ×200). (d) There were many small nests with occasional keratin pearls in the lamina propria. Below these squamous nests, some lymphocytes were seen in the deep lamina propria. (e) Arrows indicated growth of individual cells in the lamina propria (H and E, original magnification ×200).

Basal-layer-type SCC is difficult to be identified by esophagography and conventional endoscopy because of its small and superficial nature. Lugol staining might be feasible for detection of this lesion.[1,2] Magnifying NBI endoscopy of basal-layer-type SCC showed severe morphological changes and high-density IPCLs, similar to high-grade intraepithelial neoplasia and early mucosal SCC.[3]

Histologically, such basal-layer-type SCC has a deceptive histological appearance due to cell atypia, and it is limited to the lower half of the epithelium, which could be mistaken for LGIEN, while ignoring the infiltration beneath the basement membrane.

Basal-layer-type SCC differs from basaloid SCC, which has a distinct characteristic of organizational structure and cellular morphology similar to basal cells.

The surface of the lesion showed diversification and parakeratosis of the mucous membrane, which was suggestive of mucosal leukoplakia. Esophageal leukoplakia has a complete basement membrane and does not infiltrate the lamina propria, which is the most important feature for identification of SCC.

In addition, basal-layer-type SCC might be detected by TP53 mutation and cyclin D1 amplification and a high Ki-67 labeling index. All these features might help us make a correct diagnosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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