Discussion

pCLE is a novel diagnostic method used in gastrointestinal endoscopy (BE, gastric diseases, pancreatic cysts, bile duct structures and inflammatory bowel disease or colorectal lesions in the colon), as well as in the pulmonary and urinary systems, and even during surgical procedures (10, 11).

Promising data and results were gained especially for BE. One of the first prospective multicenter studies was published by Wallace et al in 2010 (7). 40 sites of BE tissue were investigated by pCLE (followed by matching biopsies) and evaluated by 11 experts in BE, with results which suggest that pCLE has a very high accuracy for the diagnoses of neoplasia in BE.

One year later Sharma et al (12) in 2011 published another prospective multicenter study on a larger cohort of patients and with a different study design. The pCLE were examined in 101 patients with BE and the combination of HD-WLE with pCLE significantly improved the ability to detect neoplasia in BE in comparison to just HD-WLE alone.

In 2011 Gaddam et al (8) set the pCLE criteria for dysplastic BE (HGD/cancer). The study resulted in the formulation of a total of six pCLE criteria which predicted dysplasia with a good degree of accuracy. These criteria were as follows: saw-toothed epithelial surface, not easily identifiable goblet cells, non-equidistant glands, unequal size and shape of glands, enlarged cells, and irregular and non-equidistant cells. However, this work did not evaluate the ability of these criteria to diagnose LGD.

Diagnostic criteria from di Pietro et al (9) in 2019 have recently been published. The best cutoff for LGD diagnosis was the positivity of any 3 of the 6 following criteria: dark non-round glands, irregular gland shape, lack of goblet cells, sharp cutoff of darkness, variable cell size, and cellular stratification.

The characteristic pCLE figures we obtained were in accordance with previously published articles and classifications (in diagnosis with BE, EAC and healthy esophagus). We found just one study from Canto et al (13) in which patients with esophagitis were also investigated using pCLE. However, the aim of that study was focused on neoplastic lesion detection and there is a lack of information about pCLE images of esophagitis. In our pCLE figures we recorded columnar cells with hyperemia and inflammatory cells (in the area of the gastroesophageal junction) and squamous epithelium in the distal esophagus with stromal papillae and their hyperemia.

Early detection of dysplastic BE lesions and their treatment is a goal for the prevention of EAC progression. However, the identification and detection of these lesions can be challenging for endoscopists. In 2017, Schölvinck et al (4) published a comparative study where the detection rates of neoplastic visible lesions (HGD or early EAC) were 60 % in community centers and 87 % in expert centers. This supports the value of expert centers for visible lesion detection. The detection and more accurate specification of the lesion can be even higher in combination with pCLE.

Fig. 3. *pCLE view of a normal distal esophagus: a, b – normal squamous epithelium of the esophagus (typical scale-like cells), no edema or inflammatory cells; c – histopathology examination: normal squamous epithelium, haematoxylin-eosin staining 40×*

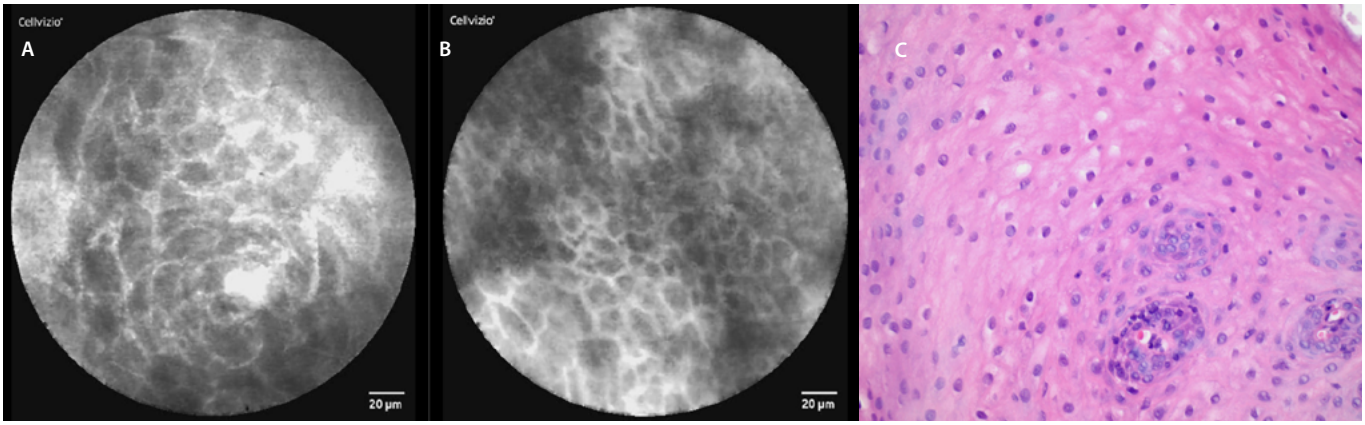

Fig. 4. *pCLE view of esophagitis: a – columnar cells, hyperemia and inflammatory cells (area of gastroesophageal junction), b – squamous epithelium, stromal papillae with hyperemia; c – histopathology examination: mixed acute and chronic inflammatory cells in the epithelium, basal cell hyperplasia, elongation and hyperemia of the lamina propria papillae, haematoxylin-eosin staining 40×*