Immune-related adverse event (AE) cholangitis caused by immune checkpoint inhibitors is relatively rare (0.05%–3.3%), and steroids are an effective treatment [1]. Although some papers have reported the characteristic findings on peroral direct cholangioscopy [2], it is still unclear how to taper the steroid dose to best improve the condition.

A 70-year-old woman had epigastralgia and liver dysfunction. She had a history of lung cancer resection and had been treated with pembrolizumab for recurrence, which had been discontinued 4 months previously because of immune-related AE dermatitis. Computed tomography (CT) and endoscopic ultrasonography (EUS) revealed marked uniform and circumferential wall thickening in the distal bile duct (▶Fig. 1). Cholangiography showed dilatation and wall irregularity in the extrahepatic bile duct (▶Fig. 2a). Peroral direct cholangioscopy showed diffuse redness and scattered mucosal stenoses, with an appearance similar to haustra (▶Video 1). Bile duct biopsy revealed an inflammatory cell infiltration, mainly of lymphocytes, in the stroma. Moreover, immunohistochemistry confirmed that these lymphocytes were mainly CD8-positive T cells, compatible with immune-related AE cholangitis (▶Fig. 3a,b).

The patient was treated with oral prednisolone 25mg (0.5mg/kg) and, after 4 weeks, her abdominal pain and liver injury had significantly improved. After 8 weeks, repeat CT, EUS, and cholangiography showed marked improvement in the thickening and irregularity of the bile duct wall (▶Fig. 2b). The cholangioscopy showed a decrease in the height of haustra-like changes in the bile duct mucosa. The infiltrate of CD8-positive cells was however still seen in the biopsy (▶Fig. 3c,d). The patient has been maintained on 3 months of prednisolone (5mg), without experiencing a clinical relapse.

Various cholangioscopic findings have been reported in immune-related AE cholangitis, including ulceration with “burned-out” epithelium, diverticulum-like findings, and membranous stenosis [3,4]. There have been no reports however that have compared these endoscopic findings after a therapeutic response. In this case, despite an improvement in the patient’s symptoms...
and in the imaging findings after treatment, direct observation of the bile duct by cholangioscopy and the histopathological findings still showed residual inflammation. Tapering off steroids in immune-related AE cholangitis may be prudent.

Fig. 3  Histopathological findings of the bile duct biopsy on: a, c hematoxylin and eosin [H&E] staining; b, d immunohistochemical staining, showing: a, b an infiltrate of inflammatory cells in the stroma, consisting mainly of lymphocytes that are CD8-positive T cells; c, d ongoing infiltration in the biopsy after 8 weeks of oral prednisolone (all magnifications, × 40).

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Endoscopy
DOI 10.1055/a-1899-8619
ISSN 0013-726X
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Competing interests

The authors declare that they have no conflict of interest.