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REVIEW ARTICLE

Biopsies in Gastrointestinal Endoscopy: When and How

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Abstract Gastrointestinal endoscopy and the acquisition of tissue samples are essential for the diagnosis and treatment of various diseases of the digestive system. However, given the differences between the recommendations and the clinical practice, the inexorable increase of requests for endoscopic examinations and the financial burden associated with it, it is crucial that we concentrate on the challenge that endoscopic biopsies represent. In this review we describe the available evidence in the literature, including the more recent published guidelines, on when or not to perform endoscopic biopsies in upper and lower endoscopy, focusing on the precise diagnosis of the most common gastrointestinal diseases that motivate endoscopic examinations and on the rational use of available resources without compromising proper management of patients.

PALAVRAS-CHAVE
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Biópsias em Endoscopia Digestiva: Quando e Como Fazê-las

Resumo A endoscopia digestiva e a aquisição de amostras tecidulares são essenciais para o diagnóstico e tratamento de diversas patologias do tubo digestivo. No entanto, tendo em conta a diferença entre as recomendações e a prática clínica, o inexorável aumento de pedidos de exames endoscópicos e os encargos financeiros associados, é fundamental que nos debrucemos sobre o desafio que as biópsias endoscópicas representam. Nesta revisão, pretendemos descrever a evidência disponível na literatura, incluindo as mais recentes *guidelines* publicadas, sobre quando ou não realizar biópsias em endoscopia digestiva alta e baixa, com foco no diagnóstico das mais comuns doenças gastrointestinais que motivam exames endoscópicos, e no uso racional dos recursos disponíveis, sem comprometer o bom acompanhamento dos doentes.

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1. Introduction

Gastrointestinal endoscopy and the acquisition of tissue samples are essential for the diagnosis and treatment of various diseases of the digestive system. Given the differences between the recommendations and the clinical practice, the inexorable increase of requests for endoscopic examinations and the financial burden associated with it, it is essential that we concentrate on the challenge that endoscopic biopsies represent. In order to rationalize the use of histopathological examinations, it is crucial to understand why some gastroenterologists perform biopsies more often than others. One possible explanation relates to the evidence that clinicians with less experience are more likely to perform unnecessary biopsies.[1]

Another crucial point is the communication with the anatomopathologists. The histological opinion is, as the radiological opinion, entirely dependent on the clinical information provided and the questions that are being asked. As such, it is essential that each endoscopy unit develop, in conjunction with the pathology departments, simple guidance on what information provide on requisitions.

In this review we describe the available evidence in the literature, including the more recent guidelines published, on when or not to perform endoscopic biopsies in upper and lower endoscopy.[2,3] These are pragmatic approaches that are based on the principle that the biopsies should be performed only when have potential to change the future approach to the patient. However, it is necessary to admit that in certain conditions the available evidence does not allow to establish strong recommendations and, in such cases, it is upon the gastroenterologist decision-making about the cost-benefit of biopsies.[4]

Tables 1 and 2 summarize the proposals to perform biopsies in upper and lower endoscopy, respectively.

2. Upper endoscopy

2.1. Gastroesophageal reflux disease

Gastroesophageal reflux disease (GERD) is an extremely common pathology. It is estimated that approximately 15% of the population of the United States presents symptoms of chronic reflux.[5] The most common complication of GERD is esophagitis, observed in 20% of the individuals submitted to endoscopy in western countries. However, the weak correlation between endoscopic and histologic findings prevents the definition of a biopsies protocol in this situation. The clinical implication of histological abnormalities in patients without macroscopic changes is unknown, and the biopsies should be directed only to irregularities of the mucosa, if clinically appropriate.[6] Also, performing endoscopic biopsies in an esophageal–gastric junction with inflammatory signs without other changes reflects a situation often associated with unnecessary use of resources. If the histological examination reveals intestinal metaplasia in this context (ultra-short segment Barrett's esophagus), the clinical significance and the follow-up to be done are unknown, by which, in this situation, the biopsy is not recommended.[7]

2.2. Barrett's esophagus

The most worrying histological complication in GERD is the development of Barrett's esophagus, in particular by its association with esophageal adenocarcinoma (20 times increased risk), whose incidence has increased.[8] Barrett's esophagus is identified endoscopically and histologically confirmed by the replacement of the normal mucosa of the distal esophagus by metaplasic columnar epithelium,[9] and is currently the main cause for esophageal biopsies. Prague classification is recommended to describe the extension of the Barrett's esophagus, taking as a point of reference the proximal limit of the gastric folds.[10] The presence of intestinal metaplasia and the extent of the changes determine the subsequent follow-up. Seattle protocol has been broadly used in the characterization of lesions compatible with Barrett's esophagus, and there is evidence that its adoption increases the success rate of the endoscopic diagnosis, in particular the detection of dysplastic changes.[11] The protocol consists in performing biopsies in the four quadrants at each 2 cm. In agreement with the histological findings, the follow-up should be the following:

- In Barrett's esophagus without dysplasia it is recommended to perform biopsies of the four quadrants at each 2 cm every 3–5 years;
- In Barrett's esophagus with low grade dysplasia it is recommend to perform biopsies of the four quadrants at each 1–2 cm every 6–12 months;
- In Barrett's esophagus with high-grade dysplasia it is recommended to perform biopsies of the four quadrants each 1 cm every three months, in the absence of treatment for its eradication.

Short segments (<3 cm) without intestinal metaplasia should not be followed after a second endoscopy confirming the absence of metaplasia.[4]

2.3. Eosinophilic esophagitis

The incidence of eosinophilic esophagitis has been increasing in recent decades. Population-based studies suggest prevalence greater than 1:1000 individuals, with higher incidence in males, and there is a clear association with other atopic pathologies.[12] The main symptoms include dysphagia and food impaction, and its diagnosis requires the integration of clinical, endoscopic and histological features.[4] The histological findings may be discontinuous in its distribution and a variable number of eosinophils per high power field have been reported. The studies revealed that the completion of 3–6 biopsies presents sensitivity between 97 and 100% when using a cut-off of 15 eosinophils per high power field.[13] It is important to mention that other conditions may present eosinophilia of the esophageal mucosa, in particular GERD, although in this case it is expected to be limited, or more exuberant, in distal esophagus. As such, the scheme of biopsies most universally accepted consists in performing two to four biopsies of the proximal esophagus, two to four biopsies of the distal esophagus and biopsies of the gastric antrum and duodenum in suspected cases of eosinophilic gastroenteritis.[14] In the presence of eosinophilia compatible