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Comparison between the endoscopic findings and the histological diagnosis of antral gastrites

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ABSTRACT – **Background** – Gastritis is a very common disorder that is widely distributed worldwide, representing one of the most prevalent pathological entities in Gastroenterology and Digestive Endoscopy. **Objective** – This study aims to analyze the correlation between the endoscopic findings and the histological diagnosis of antral gastritis. **Methods** – In this study, 92 reports of upper digestive endoscopy were performed between November 2014 and January 2015, including biopsy of the antral gastric mucosa, comparing the endoscopic and histological findings, which were classified according to the Sidney System. The 92 exams included 35 men and 57 women, ranging in age from 15 to 84 years. The most frequent indication was epigastric pain. **Results** – Of the 92 examinations analyzed, the histological diagnosis of antral gastritis appeared in 75 exams, 59 endoscopic reports contained the diagnosis of antral gastritis, and 33 endoscopic findings were normal. The kappa coefficient was 0.212 (P<0.05), indicating that there was no significant agreement between the endoscopic findings and the histological diagnosis of antral gastritis. **Conclusion** – We conclude that histology represents the gold standard method for the diagnosis of antral gastritis and that in daily clinical practice, biopsies should always be performed, regardless of the endoscopic findings.

HEADINGS – Gastritis, diagnosis. Endoscopy. Gastric mucosa. Biopsy.

INTRODUCTION

The term gastritis was first used in 1728 by Stahl. There is still controversy about the term gastritis, mainly due to the lack of correlation between the clinical, endoscopic and histological manifestations. Gastritis is a very common condition, with a wide distribution worldwide, and its prevalence increases with age. After the age of 60, the prevalence of gastritis varies from 50% to 100% and appears to be higher in low socioeconomic populations. Its main etiological factor is *Helicobacter pylori*, which has high incidence (approximately 50% in the world population) and is marked by the presence of mucosal inflammation, representing the stomach's response to an injury[1]. Histologically, gastritis exhibits cellular lesion, regenerative process, inflammatory infiltration of the mucosa and the presence of lymphoid follicles [2].

In the 1960s, the endoscopic era began with the introduction of flexible endoscopy; later, with the introduction of the biopsy channel in the appliances, directed collection of gastric mucosa became possible. In 1990, a multidisciplinary committee developed the Sydney Classification System with the aim to standardize the different terminologies used, trying to define the endoscopic, histological and etiological aspects whenever possible. In 1994, a new consensus was held in Houston (i.e., the modified Sidney Classification). The Sidney System for the classification of gastritis establishes two major divisions that interact: histological and endoscopic[1,2].

Histology includes the following findings: inflammation, inflammatory activity, glandular atrophy, intestinal metaplasia, dysplasia, *H. pylori* detection, evolutionary characteristics (acute or chronic) and gradation (mild, moderate, intense). Hematoxylin-eosin is the stain used in microscopy. One of the practical consequences of this system is the inclusion of endoscopic biopsies for investigation of gastroduodenal disease[1,2].

The diagnosis of gastritis can only be established by gastric biopsy. At least five biopsy specimens are recommended: the large and small curvatures of the distal antrum; the angular incisura; and the anterior and posterior walls of the proximal body. Unfortunately, the correlation between endoscopic and histological appearances is weak. Endoscopy is usually used for the diagnosis of possible causes of dyspepsia. In general practice, different aspects can be found during endoscopy; however, there is no consensus on the association of endoscopic gastric findings and histopathological conditions[3,4].

Although poor, correlations between endoscopic findings and histological changes have been detected in many studies[5-8]. Good correlations were reported only in the severe types of gastritis or normal endoscopy[4,7,9]. Given the divergence between the studies in the literature, the objective of this study was to evaluate the degree of agreement between the endoscopic and histological reports regarding the diagnosis of antral gastritis in upper digestive endoscopy examinations.

METHODS

To accomplish this study, 250 histological reports conducted between November of 2014 and January of 2015 were initially collected, including products of biopsies of upper digestive en-

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doscopies and colonoscopies. From this initial group, reports that presented biopsy material fragments of antral mucosa were selected for convenience, for a total of 100 reports (initial sample). In this selection, the reports referring to colonoscopies were excluded, as were those that contained biopsies than those of antral gastric mucosa. After the selection of the histological reports, we performed an active search for the corresponding endoscopic reports, which were stored on the report room computers. In this search, 08 endoscopic reports were not found, requiring their exclusion and resulting in a final sample of 92 reports for the study (n=92).

The endoscopic and histological reports were elaborated according to the Sydney Classification. The Sidney System for the classification of gastritis presents two major divisions that interact: histological and endoscopic.

Endoscopic classifications included 1. Topography (pan gastritis, body gastritis, antrum gastritis); 2. Category (enanthematous/exudative, erosive flat and elevated, atrophic, hemorrhagic, reflux, hyperplastic); and 3. Intensity (mild, moderate, marked)[10].

Histology included the following findings: inflammation, inflammatory activity, glandular atrophy, intestinal metaplasia, dysplasia, *Helicobacter pylori* detection, evolutionary characteristics (acute or chronic) and gradation (mild, moderate, intense). Hematoxylin-eosin was the stain used in microscopy. The following data were analyzed and computed: age, sex, indication of the exam, presence or absence of antral, endoscopic and histological gastritis and presence or absence of *H. pylori*[10].

Endoscopy

To perform the upper digestive endoscopy examinations, the patients remained in absolute fast for a minimum period of 8 hours. After directed anamnesis and signing of the consent form, the patients were referred to the examination room, where pulse oximetry, noninvasive blood pressure (BP) and heart rate were monitored. Patients were given simethicone (40 drops via oral) and lidocaine spray (10 jets in the oropharynx). The exams were performed with patients in left lateral decubitus and under superficial venous sedation, administering midazolam 5 mg and fentanyl 50 mcg, reserving the use of propofol for selected cases. In the exams, four fragments of gastric mucosa, two fragments of antrum (small and large curvatures) and two fragments of gastric body (small and large curvatures) were collected for biopsy material. The collected fragments were placed in separate flasks containing 10% formalin solution and then sent to the pathology laboratory[11-14].

Data analysis

To determine whether the endoscopic findings corresponded to the histological findings for antral gastritis, the kappa concordance index test was performed, with a significance level of $P<0.05$. For the data analysis, MEDCALC software was used.

RESULTS

Of the 92 patients included in the study, 57 were males and 35 females, ranging in age from 15 to 84 years. The most prevalent indications were epigastric pain, pyrosis, dyspepsia and *H. pylori* eradication control.

Regarding the endoscopic reports analyzed, 59 presented antral gastritis, while 33 were normal. Upon analyzing the histopathological reports, 75 presented antral gastritis, while 17 were normal (TABLE 1).

TABLE 1. Relationship between endoscopy and histology for the diagnosis of antral gastritis.

Endoscopic and histological gastritis	49
Normal endoscopy and histology	7
Endoscopic gastritis with normal histology	10
Histological gastritis with normal endoscopy	26

Histological investigation of the presence of *H. pylori* was performed in 90 patients: 42 had *H. pylori* infection, while 48 did not present *H. pylori* (TABLE 2).

In this study, the kappa coefficient was applied to evaluate the relationship of antral gastritis diagnosis between the endoscopic and histological methods, with a value of 0.212 (confidence interval [0.08-0.34] and $P<0.05$).

TABLE 2. Relationship between *H. pylori* infection and the presence of endoscopic and histological gastritis.

	Histopathology		Endoscopy	
H. pylori	+	–	+	–
Present	42	0	26	16
Absent	31	17	32	16

DISCUSSION

Some studies have shown that there is a poor correlation between the endoscopic findings and the histological diagnosis of gastritis. The aim of this study was to evaluate the correlation between endoscopic and histological diagnosis of antral gastritis.

Data from 92 upper digestive endoscopies were examined in an original study addressing the issue of concordance between endoscopic and histological diagnoses of antral gastritis. The main finding found in this study showed that there was a low correlation between the endoscopic findings and the histological diagnosis, which was demonstrated by the kappa index of 0.212. Because agreement is generally considered substantial when associated with a kappa index greater than 0.6, the value of 0.212 reflects a poor correlation in this context[15-17].

Some studies have shown that there is a poor correlation between endoscopic findings and histological diagnosis of gastritis[5,6,18,19]. Kaur and Raj[20], in a study to assess the correlation between histological gastritis and endoscopic findings, showed that there was a poor correlation between them. They concluded that endoscopic findings are an unreliable predictor of histological gastritis. A study by Fung et al.[6] in dyspeptic patients showed that the endoscopic diagnosis was relatively imprecise in specific types of gastritis. They showed that among 33 dyspeptic patients diagnosed with endoscopic gastritis, histological confirmation was detected in 3/9, 10/14 and 0/6 cases of chronic atrophic gastritis, chronic (superficial) gastritis and acute gastritis, respectively. A study by Redéen et al.[21] in 488 adult individuals selected from a general population showed that, except for the absence of visible vessels and folds in the gastric body, endoscopic findings had very limited value in the evaluation of histological gastritis. Calabrese et al.[19],

in a prospective study evaluating the correlation of endoscopic findings with histological changes and *H. pylori* infection, showed that the correlation between endoscopic findings and histological diagnoses of gastritis was poor and concluded that biopsies were mandatory in all patients. A study by Jonsson et al.[22] in 210 dyspeptic patients showed that the endoscopic diagnosis correlated significantly with histological changes in the duodenal bulb, but not in the stomach. A study by Elta et al.[23] concluded that the histological and endoscopic findings in the stomach of patients with symptomatic erosive gastroduodenitis correlated poorly, while there was good correlation in the duodenum.

One limitation of our study was that different medical professionals performed the endoscopies and the histopathological exams in the referenced laboratory.

The main contribution of our study is that in clinical practice, the endoscopic diagnosis of antral gastritis should always be confirmed by histology. Biopsies should always be performed regardless of the endoscopic findings because they do not have such a high cost, are easy to perform with a low complication rate and are indispensable for diagnosis.

CONCLUSION

Our study showed that gastritis cannot be safely diagnosed by endoscopy, assuming histology to be the gold standard method. This conclusion is consistent with most studies in this field, and we agree with other authors who have concluded that histology is mandatory for accurate diagnosis. If the diagnosis of gastric inflammation is of clinical relevance, biopsies should always be performed, regardless of the endoscopic findings.

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Authors' contribution

Bertges LC: final approval of the article. Dibai F: data collection. Bezerra G: data collection. Oliveira ES: data collection. Aarestrup FM: statistical analysis. Bertges KR: review of the manuscript and study supervision.

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RESUMO – **Contexto** – Gastrite é uma afecção muito comum, de larga distribuição mundial, representando uma das entidades patológicas mais prevalentes em Gastroenterologia e Endoscopia Digestiva. **Objetivo** – Este estudo tem por objetivo analisar a correlação entre os achados endoscópicos e o diagnóstico histológico de gastrite antral. **Métodos** – Nesse estudo, foram analisados 92 laudos de endoscopia digestiva alta, realizados entre novembro de 2014 e janeiro de 2015, que continham biópsia de mucosa gástrica antral, comparando-se os achados endoscópicos e histológicos, que foram classificados segundo o Sistema Sidney. Os 92 exames analisados englobaram 35 homens e 57 mulheres, com idade variando entre 15 e 84 anos. A indicação mais frequente foi epigastralgia. **Resultados** – Dentre os 92 exames analisados, o diagnóstico histológico de gastrite antral apareceu em 75 exames, sendo que 59 laudos endoscópicos continham o diagnóstico de gastrite antral e 33 laudos endoscópicos foram normais. O coeficiente kappa foi 0,212 com $P<0,05$, mostrando que não há concordância significativa entre os achados endoscópicos e o diagnóstico histológico de gastrite antral. **Conclusão** – Concluímos que a histologia representa o método padrão-ouro para o diagnóstico de gastrite antral, e que na prática clínica diária, biópsias devem ser sempre realizadas, independente dos achados endoscópicos.

DESCRITORES – Gastrite, diagnóstico. Endoscopia. Mucosa gástrica. Biópsia.

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