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How important is the collaboration among gastroenterologists and pathologists? Do they see two sides of the same coin?

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Improving communication among healthcare providers is a familiar topic to most physicians. Among them, gastroenterologists and pathologists have realized that their effective communication must become an even higher priority. Although this concept may seem to receive a disproportionate amount of emphasis, research continues to show that poor communication contributes to many medical errors and is "a top reason for team mishaps and subsequent lawsuits" [1,2]. This working relationship often requires close collaboration and coordination; thus, successful communication is vital to ensure patient safety and reduce the risk of errors.

A patient, who experiences uncomfortable symptoms involving his digestive tract, is going to contact a gastroenterologist. The forementioned clinician must take an accurate history, perform a physical examination and if it is necessary a diagnostic endoscopy, taking biopsies. Then, the ball goes to the pathologist's field. Even the most experienced pathologist may find it extremely difficult to report a case without being aware of the clinical history of the patients. The information that a pathologist must know in order to appropriately evaluate a biopsy and make a diagnosis is diverse, and usually the main source of this information is the gastroenterologist, such as every other clinician responsible for the care of patients.

The pathologist will study the cytological and histological structure of normal or abnormal tissue. The pathologist's report will have major implications for the clinical diagnosis, management, and follow up. Then, the gastroenterologist will play a continuing role in the treatment and well-being of the patient after the diagnosis [3,4].

Patients may never meet the pathologist involved in diagnosis, but an accurate and detailed diagnosis is a critical first step to move forward and define a treatment plan.

The gold standard for diagnosis is the bidirectional relationship between the pathologist and the gastroenterologist.

In general, good diagnosis is based on the following procedures: clinical examination, endoscopy, sampling (biopsy), morphological evaluation, and reporting [3,4].

The endoscopist must provide the pathologist with information about the patient, including the findings of the gross examination, biopsy location, relevant clinical history, bowel preparation, and current medications [5]. For example, a gastroenterologist should clarify whether a lesion is local or diffused, because that may help, for example, in the differential diagnosis of an "inflammatory polyp" from "colitis".

Moreover, the gastroenterologist is responsible for supplying appropriate samples. One study found that the number of biopsy samples from two to eight improved the detection of esophageal carcinoma from 95.8% to 100%, meaning that four cases out of 100 are missed if only two biopsy samples are taken [6].

Consider a pathologist with a gastric biopsy, not being aware of the patient's history of gastric MALT lymphoma. He may consider it as chronic gastritis,

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missing a remaining focus, which sometimes needs immunohistochemistry to be revealed.

There are cases of Inflammatory Bowel Disease (IBD) where there are no isolated histological features diagnostic of a subtype of IBD. Instead, the pathologist should take into consideration that certain features are more prevalent in one subtype than in another. Diagnostic accuracy is optimized if there is the opportunity to assess multiple features together, for example if the intersite and intrasite distribution of changes is also analyzed, and if clinical details are taken into account [7]. A diagnosis of IBD is a challenging task for a pathologist as he/she cannot do it by his/her own. He must know the number of biopsy specimens taken, the topography of the samples, the endoscopic report, the macroscopic appearance of the mucosa, the endoscopic score of the inflammation [8,9]. The extent of the disease can be determined endoscopically. Moreover, in a long standing IBD, the pathologist must be aware of any treatment which may have changed the course of the disease [10-12].

A gastroenterologist can get the best out of his pathologist, giving the appropriate information about the patient's clinical history, making him/her aware of the possible clinical diagnosis and asking him/her to collaborate in order to conclude the most accurate diagnosis for the patient.

Pathologists have to talk to their clinicians and vice versa; sometimes a case may need to be discussed in a multidisciplinary team, for example a case of IBD with extensive areas of dysplasia. All these recommendations may seem obvious and undisputable, however most of pathology departments receive samples with incomplete or no clinical details, or even worse biopsies from different sites may arrive within the same vial [11, 12].

On the other hand, biopsies may be interpreted wrongly when pathologists are unaware of the clinical background. Pathologists should examine and describe only features that are relevant to the clinician and reproducible. Histopathological findings must be reported in an accurate, reliable and reproducible way. The language must facilitate clear, direct communication among pathologists themselves and between pathologists and gastroenterologists [3, 4]. The pathology report must be clear and comprehensive for clinicians, describing all histological features and providing a diagnosis. The best scenario would be the lowest interobserver and intra-observer differences.

The most common clinical decisions, based on pathological findings, involve the differential diagnosis between malignant and benign lesions, as well as the characterization of inflammation in IBD, gastritis etc. Based on histopathological diagnosis, a gastric or colonic polyp may be benign or neoplastic [13, 14]. A biopsy from the terminal ileum can differentiate Crohn's ileitis from tuberculosis [15] and a colonic biopsy distinguishes ulcerative colitis from specific, self-limited colitis, or Crohn's disease [16].

Both pathologists and gastroenterologists must cooperate and use common terminology and follow accepted guidelines, such as the Sidney classification of gastritis [17] and low grade versus high grade dysplasia in Barrett's esophagus [18] and ulcerative colitis [19]. The pathologist's diagnosis determines patient management, follow up, and treatment. For example, a diagnosis of Barrett's esophagus needs an annual or biennial endoscopy and biopsy, and treatment with high dose proton pump inhibitors. If the diagnosis is that of Barrett's esophagus with low grade dysplasia, the patient needs endoscopy after six months, but when the diagnosis is high grade dysplasia, endoscopic mucosal resection or surgery should be performed [18].

The pathologist must accurately communicate the results and provide all necessary data so that the gastroenterologist can take the necessary steps for treatment or follow up. There are cases with uncertainties in diagnosis [3, 4]. Pathologists often use terms as "consistent with" or "suggestive of" which can be interpreted differently by different people [20]. A scoring system would help avoid any misunderstanding or confusion, but this is not always possible [21]. For example, an adenoma of the large intestine should be characterized as having, low or high grade, dysplasia and not with descriptive terms with no clinical applications. The pathologist should try to reach a conclusion and not only a descriptive diagnosis, as this may be misleading. Describing mild chronic inflammation in colon mucosa which may be a feature of normal colon without clinical importance may lead to unnecessary follow up, as gastroenterologists may suspect the beginning of a colitis. Moreover, the inclusion of the term "atypia" in a pathology report should be clarified whether it refers to regenerative or dysplastic. The "grey zones" of unclassified dysplasia should be avoided, if it is possible.

The pathologist must provide a reproducible and useful report that addresses the clinical questions posed by the endoscopist. A poor interdisciplinary dialogue can lead to mistreatment or mismanagement, some-

times with dire outcome. Histopathological evaluation is prone to subjective biases, despite the use of indices. In addition, these indices are developed by expert IBD pathologist, but applied at large, by general pathologist [22].

Gastroenterologists and pathologists should consider themselves as the blind men in the parable with the elephant. Imagine these blind men who have never come across an elephant before and try to learn what the elephant is like by touching it. Each blind man examines a different part of the elephant's body, but only one part, such as the side or the tusk or the tail. Then they describe the elephant based on their limited experience. The moral of the parable is that doctors should not claim absolute truth based only on the experience of their specialty, ignoring other doctors' experiences.

A more sophisticated or detailed diagnosis actually translates to better care, and provides numerous examples that show not only a clinical benefit to the patient and the gastroenterologist, but also a financial advantage for payors (patients or insurances) [12]. For the optimal communication between pathologists and gastroenterologists, pathologists must ensure accurate assessment and clear and relevant reports, and gastroenterologists must provide all relevant clinical information, the endoscopic picture and ensure proper and adequate sampling. The coin is the same: the ultimate benefit of the patient.

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