



# Inflammatory and infectious pathology of the gastrointestinal tract: an introduction

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In this year's Annual Review Issue, we have decided to focus our interest on inflammatory and infectious conditions of the gastrointestinal tract. While the last 20 years brought significant information on GI neoplasia, the access to more biopsy material worldwide – coupled with increased recognition of the spectrum of underlying diseases – deeply impacts the growing field of non-neoplastic gastrointestinal pathology. Prompted also by a more intimate understanding of molecular inflammatory pathways, we have now gained a broader understanding of the mechanisms at play in the development of debilitating inflammatory and infectious gastrointestinal diseases.

To cover such a large and diverse array of subjects we called upon a group of international experts hailing from Europe, Australia, South Africa and North America to produce a superb issue.

In the first paper of the series Drs. Kumarasinghe and Brown (<https://doi.org/10.1007/s00428-017-2210-3>) present a timely review on the diagnosis of granulomas in the gut. Established on their boundless experience they offer diagnostic clues based on the nature, the appearance and locations of the granulomas. Following their approach, pathologists will be able in most cases to either define the aetiology with certainty or at least narrow the differential diagnosis before additional testing and clinical anamnesis lead to final diagnosis.

Eosinophilic gastrointestinal diseases have been increasing in prevalence in Western countries in recent years. Drs. McCarthy and Sheahan (<https://doi.org/10.1007/s00428-017-2249-1>) present an extensive review on the topic, ranging from normal to pathology or disease. Since physiologic values of eosinophilia vary widely between the different segments of the large bowel, location of the biopsy is critically important for the interpretation. No standard diagnostic criteria have been proposed for the diagnosis of eosinophilic gastroenteritis or eosinophilic colitis up to now. The authors present in detail the morphological features that may guide the diagnosis. Still, final assessment of eosinophilic gastrointestinal diseases requires careful histopathologic assessment, clinical correlation and exclusion of several differential diagnoses.

Drs. Johncilla and Srivastava (<https://doi.org/10.1007/s00428-017-2238-4>) have contributed an exhaustive review of the diagnosis of oesophageal inflammatory disorders at the exception of gastroesophageal reflux disease. Our colleagues present a unique approach of describing first the morphological patterns and later the differential diagnosis of common aetiologies related to each pattern of esophagitis. As the authors report, this approach is closer to clinical practice and offers the best benefit to trainees and practicing general pathologists.

Dr. Biswas and colleagues (<https://doi.org/10.1007/s00428-018-2317-1>) draw our attention to the pathologist's role when handling surveillance biopsies from patients with Barrett's oesophagus. The authors illustrate the complex mosaic of metaplastic glandular phenotypes that are frequently seen in these patients and also refer to the phenotypic dynamics of Barrett's oesophagus across time and space. Understanding the ecological conditions that drive malignant evolution in Barrett's may help us avoid burdensome and costly surveillance in patients at low risk of transformation and intervene in patients at increased risk.

Dr. Umetsu and colleagues (<https://doi.org/10.1007/s00428-017-2243-7>) present a thorough review on autoimmune enteropathy, a rare condition characterised by

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intractable diarrhoea and immune-mediated injury of the intestinal mucosa. The authors offer a broad discussion of this heterogeneous group of lesions which manifest with different patterns. It is the hope that this article will help general pathologists to become more acquainted with this unusual and most probably underdiagnosed pathology.

Certain types of colitides, such as collagenous colitis, lymphocytic colitis, and ischemic colitis, have distinct histologic features that allow for a specific diagnosis. However, in most colonic biopsy specimens, a definite diagnosis cannot be established on the basis of histology alone. In this issue, Drs. Patil and Odze (<https://doi.org/10.1007/s00428-017-2274-0>) present a thorough pattern-based algorithmic approach to diagnosis that includes general guidelines to distinguish variations in normal mucosa and biopsy procedure-related artefacts from true inflammatory conditions.

The diagnosis of chronic inflammatory bowel disease may remain challenging in both biopsy and resection specimens. Drs. Loughrey and Shepherd (<https://doi.org/10.1007/s00428-017-2235-7>) have chosen selected areas of particular diagnostic difficulty, providing key advice for pathology reporting. Those mimics which have the greatest potential for misdiagnosis are extensively discussed as are the most important distinguishing features between the two main forms of chronic inflammatory bowel disease, ulcerative colitis and Crohn's disease; first in relation to resection specimens, and then with emphasis on features which may also be diagnostically useful in endoscopic biopsy material.

The therapeutic management of inflammatory bowel disease is changing rapidly with new class of medication. Recent experiences suggest that histologic measurement of inflammation (and particularly ulcerative colitis) is superior to endoscopic evaluation in evaluating outcomes. Drs. Pai and Geboes (<https://doi.org/10.1007/s00428-017-2156-5>) cover the important subject of histologic scoring systems and share their phenomenal experience with the readers.

Another international collaboration between Drs. Ensari, Kelsen and Russo (<https://doi.org/10.1007/s00428-017-2197-9>) delivers a timely review on new challenging conditions in the field of paediatric gastrointestinal pathology. Childhood enteropathies are a group of diseases causing severe chronic diarrhoea often starting in the first week of life with the potential for fatal complications. Herein, the contributors educate on how they can be classified into four groups based on the underlying pathology. Another recently recognised set of conditions that they discuss is very early onset monogenic inflammatory bowel disease.

Drug-induced injury is increasingly recognised within the gastrointestinal tract. The introduction of new drugs, particularly in the field of targeted anti-cancer therapy, has significantly widened the spectrum of histologic patterns that may be encountered by the pathologist. Drs. Assarzagdegan et al. (<https://doi.org/10.1007/s00428-017-2267-z>) specifically refer to the colitides associated with immune checkpoint inhibitor therapy. These cases are characterised by significant overlap with other inflammatory conditions, making the differential diagnosis difficult, in particular in the absence of clinical history. All histologic features that may be used to guide diagnosis are discussed meticulously.

As international travels and global human migration have increased over the last few decades, intestinal pathology of tropical infectious disease can be encountered at 'home' once the travellers return. Based upon their vast experience, Dr. Slavik and one of this issue's editors (<https://doi.org/10.1007/s00428-017-2166-3>) present an exhaustive review with a practical approach to pathologists, helping to either confirm or entertain a broad differential diagnoses when appropriate.

Sexually transmitted infections of the gastrointestinal tract represent a related topic with a high risk of misdiagnosis in the routine setting. In their extensive review, Drs. Jawale et al. (<https://doi.org/10.1007/s00428-017-2261-5>) describe the patterns of injury associated with these pathogens, especially those that may mimic primary gastrointestinal conditions, such as chronic inflammatory bowel disease. The review focuses upon sexually transmitted infections of the lower gastrointestinal tract, organised by the most common site of involvement: the anus, rectum, and colon.

In the final paper of the series, Drs. Gorkiewicz and Moschen (<https://doi.org/10.1007/s00428-017-2277-x>) present a timely review of the significance of the gut microbial community in health and disease. They report on the association between respective changes in microbiome composition and the development of inflammatory and neoplastic diseases of the upper and lower gastrointestinal tract. They conclude their review with current therapeutic efforts to restore disturbed microbiome compositions as therapeutic approach.

In conclusion, we hope that the 13 articles of this year's Annual Review Issue will be noted instructive by our colleagues. The success of this multinational efforts will be gauged by how much the pathologists find guidance in their clinical practice and if it is also of benefit to trainees.