1. The Lémann Index for Crohn’s disease is here; how will we use it?

Current indices used in Crohn’s disease, such as HBI and CDAI only measure the disease activity at a certain time point and are prone to subjective interpretations. To measure the cumulative bowel damage resulting from disease progression and complications such as strictures, fistulas and surgeries, investigators have developed a new instrument called the “Lémann index” (LI) from the name of one of its earliest proponents. The process involved a cross-sectional observational study performed at 24 centers of expertise from 15 countries. Adult patients with established CD underwent anatomical investigations such as MRI or CT in addition to endoscopic procedures to define their disease extent and degree of structural damage divided in 4 organ components (upper GI, small bowel, colon/rectum and anus), all of which were further subdivided in segments. After pairs of gastroenterologists and radiologists evaluated the extent and severity of segmental, organ and global Crohn’s disease damage, adjustment coefficients were calculated for each segment and organ using multiple linear regression models. Internal validation found a good correlation between predicted Lémann indexes and investigator damage evaluations. However, considerable inter-observer variability was noted in the development phase of this index. The investigators also noted that the median LI increased significantly with disease duration indicating reasonably good construct validity.

Comments: This paper makes for very difficult reading due to its highly technical language and methodological complexity. That said, the Lémann index is the first tool that can measure the global cumulative bowel damage caused by Crohn’s disease. While in the current version it may be rather difficult to use and likely won’t be adopted in practice, the LI may be a good instrument for clinical research and clinical trials evaluating the effect of medical therapy in Crohn’s disease. Extensive validation of this index is still required to assess reliability and responsiveness to intervention (for instance LI may decrease or stabilize with certain treatments). The other aspect that will require fine tuning is the assessment of the impact surgery on the overall degree of bowel damage. Neither the length of bowel resected, nor the type of surgery or the presence of a stoma are included in the model. It is likely that multiple revisions of the LI are forthcoming. Yet, this is a huge first step in the right direction.


2. A breath test for diagnosing IBD?

The diagnosis of IBD requires a combination of symptoms and invasive investigations, the most common of which are endoscopy and radiology. There is no single test that is sufficient for diagnosing IBD or differentiating UC from Crohn’s disease. Technical advances have allowed the measurement of a number of inorganic and organic volatile compounds in human breath that can differentiate between health and disease (for instance H pylori and SIBO). This review article discusses in detail the physiology and potential applications of the breath metabolome with specific emphasis in IBD. The human breath metabolome is a gaseous mix of hundreds of volatile and non-volatile organic and inorganic compounds which are the results of exogenous sources (diet) and endogenous ones (the results of human
metabolism or abnormal physiology). Cytokines like IL-1, IL-6 and TNF-alpha can also “leak” in the exhaled gasses in minute amounts and can be measured using sophisticated analytical methods. The authors review a number of small studies that have evaluated the association between IBD and changes in the breath metabolome and identify a few promising candidates for further study. Certain individual molecules or patterns of compounds have been able to distinguish with a certain level of accuracy between IBD and controls as well as between active and inactive IBD but not between UC and Crohn’s disease. These molecules or patterns of biochemical alterations in breath can be measured either independently through direct chemical analysis or by using “electronic noses” which use a pattern recognition approach to changes in the breath composition much like the human or animal nose would do.

**Comments:** Breath analysis in IBD is certainly an attractive modality of diagnosis given its lack of invasiveness, convenience and relatively low cost. However, the research in this field is still in the embryonic stage. The accuracy and reliability of these analyses for IBD compared to the “gold standard” is unknown. Nevertheless, identifying compounds that are both sensitive and specific for IBD not only may represent a huge leap forward in terms of screening and diagnosis but also in understanding the pathophysiology of these disorders and potentially finding new therapies.


### 3. Perioperative corticosteroid management in IBD. How much have we learned in 50 years?

Steroids are frequently used in patients with IBD including some who will require surgery for refractory or complicated disease. Thus steroids and OR’s are frequently on a collision course. The use of “stress doses” of steroids to prevent adrenal crisis has to be balanced against the well-described perioperative complications resulting from steroid use, of which the most dreaded are leaks and sepsis. This review summarizes nicely the data on the benefits and risks of steroids use and offers a simple algorithm for their management in the perioperative period. The authors point out that the evidence of “risk” dates back to the 50s and consists essentially in 2 case reports. A succinct description of the HPA axis and an easy to remember dose equivalency table for various steroids is also offered: hydrocortisone-prednisone-prednisolone-dexamethasone equivalent dose = 20 – 5 – 4 – 0.5 mg, respectively. Data shows that the HPA axis will eventually recover in all patients even after prolonged steroid use but the recovery time is highly variable, from weeks to months. Most recent studies including small randomized trials have shown that perioperative “stress doses” of steroids are not necessary in patients who are not current steroid users. Current users should receive their regular daily dose. Patients who undergo major surgery and have a history of recent high-dose steroid use can be stratified using a simple morning cortisol level (drawn between 6-8 am). If the level is > 18 µg/dL, no additional steroids are needed. For levels below that, an individualized approach may be taken. Patients undergoing major surgery should be considered for additional steroid use, particularly if the cortisol level is < 3. However, the optimal dose to prevent postural hypotension and/or adrenal crisis is unknown.

**Comments:** This easy to read article provides a nice overview of the physiology of the HPA axis and a relatively easy to follow algorithm for the management of steroids in the perioperative period. The authors point out the lack of guidelines and the scarcity of data in this field conceivably due to a relatively low interest in the medical and surgical community. Old habits are hard to change particularly when the benefits are unclear.