A specific link between migraine and functional GI disorders

A substantial body of published research over the past 40 years has established that functional gastrointestinal disorders have an unusually large overlap with several non-gastrointestinal pain syndromes, including fibromyalgia, chronic pelvic pain, and temporomandibular joint disorder.[1] Migraine has also been found to have such excess comorbidity with functional gastrointestinal disorders. For example, a meta-analysis[2] of six studies reported an overall odds ratio (OR) of 2·66 for migraine in individuals with irritable bowel syndrome (IBS).

Most of the published research has been limited to assessments of the association between gastrointestinal disorders and one or a few other disorders. However, a few large studies[3,4] with a broader scope have reported that individuals with functional gastrointestinal disorders have significantly higher odds than comparison groups of the great majority of all medical diagnoses. These observations call into question the typical assumption that excess overlap must signify a common underlying pathophysiological mechanism. The obvious alternative suggested by the broad pattern of comorbidity is that the cause is simply a heightened tendency to experience and report varied body symptoms and visit doctors for them; a characteristic typically called somatisation.[5] The more different symptoms experienced and reported to the doctor, the more likely an individual is to meet criteria for multiple different medical diagnoses. Indeed, those with functional gastrointestinal disorders tend to score unusually high on somatisation questionnaires, reporting all kinds of non-specific body symptoms at increased rates.[1,6,7] Therefore, there is a need to determine whether anything more specific than such tendency toward somatisation is the cause of the overlap of functional gastrointestinal disorders with other medical disorders. Studies need to demonstrate that there is a strong association with particular disorders that is different from what is seen for other similar disorders, and that there is evidence that directly suggests a common mechanism.

In *The Lancet Gastroenterology & Hepatology*, Julie Le Gal and colleagues[8] report a robust case-control study that fills these requirements. In the study, done in the emergency departments of four European hospitals, the investigators compared the prevalence of ten functional gastrointestinal disorders in three groups of children and adolescents aged 6–18 years (257 with migraine, 167 with tension-type headache, and a control group of 648 headache-free individuals). Headaches were diagnosed by a neurologist using the International Classification of Headache Disorders. The ten functional gastrointestinal disorder diagnoses were based on the Rome III diagnostic criteria and were made by investigators masked to the headache diagnosis of each child.

The researchers found that three of the four pain-predominant functional gastrointestinal disorders

assessed had excessive prevalence in the migraine group: functional dyspepsia (OR *vs* control 10·76, 95% CI 3·52–32·85; p<0·0001), IBS (3·47, 1·81–6·62; p=0·0002), and abdominal migraine (5·87, 1·95–17·69; p=0·002). By contrast, there was an inverse association between migraine and functional constipation (0·34, 0·14–0·84, p=0·02), and none of the other non-pain functional gastrointestinal disorders showed any association with migraine. The group with tension-type headache did not show unusual prevalence of any of the ten functional gastrointestinal disorders evaluated.[8]

The unique contribution of this study to the literature lies in this pattern of its findings. They clearly indicate that a specific relationship exists between migraine and functional gastrointestinal disorders that cannot be explained by a general propensity towards symptom experience and reporting, since one type of headache showed substantial association with functional gastrointestinal disorders but another type of headache showed no such relationship. Furthermore, the results strongly suggest that the reason for this specific relationship is a common pathophysiological mechanism that is centred on pain genesis, since only functional gastrointestinal disorders involving pain had any association with migraine. Unfortunately, the study cannot provide any further clues about the exact nature of that mechanism. The authors correctly point out that there are many suspects, including inflammatory mediators, serotonin, and calcitonin gene-related peptide; all of which have some evidence implicating them in both migraine and symptoms of functional gastrointestinal disorders.

This study strongly needs follow-up research. This work should include replication of the findings in children, as well as in adults, and the use of blood measures or biopsies to evaluate the role of each of the likely common causal factors in pain in functional gastrointestinal disorders and migraine. In the meantime, the findings ought to encourage both clinicians and researchers to regard migraine and functional gastrointestinal disorders as health problems that are likely to be inter-related when they exist in the same patient, even though they express themselves in entirely different organ systems.

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I declare no competing interests.

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