

**ATMOSPHERIC PRESSURE DOES NOT INFLUENCE ON
DIVERTICULAR DISEASE**

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Dear Director:

We read with interest the review about pathophysiology and prevention of diverticulitis and diverticular perforation you published on October 2010 (1). As you say, increased intraluminal pressure has been suggested as a pathogenic factor for diverticular disease; moreover, we agree with you that studies on this issue are needed and have been scarce in recent years.

In the 60's Arfwidsson et al showed higher luminal pressures in patients with sigmoid diverticula (2). Painter N.S. confirmed this and showed that the basal pressure of the sigmoid colon is a few millimetres of mercury above atmospheric pressure in both patients with and without diverticular disease (3)(4). We thought that changes in atmospheric pressure could have an influence on the pathophysiology of diverticular disease of the colon as it has been demonstrated that changes in internal pressure of the colon are related to this disease, not only in the sigmoid colon but also in the right colon (5). The question if atmospheric events can have an influence on some acute or chronic diseases has been previously raised (6)(7). We thought that atmospheric pressure could have an influence on the development of diverticulitis by raising intradiverticular pressure in days with higher atmospheric pressure; increasing by these means potentially damaging pathogenic mechanisms such as barotrauma, mucosal abrasion and bacterial translocation through the compromised wall of the colon diverticula (8)(9).

In order to prove this hypothesis, we collected in a prospective way the value in millibars of atmospheric pressure of every day of 2011 provided by the meteorological agency of our city and the dairy trends. Then, we studied all the

patients with acute diverticulitis that attended the emergency department of our hospital, a tertiary centre with a referral population of three hundred thousand people. The diagnosis was made according to the Guidelines of the European Association for Endoscopic Surgeons (EAES)(10) and all of the patients had a computed tomography performed as it is recommended (11).

The average barometric pressure was 1018,9 millibars (range: 1000 - 1040 millibars); it was rising in 45 days, falling in 99 days and steady in 221 days. There were 68 days in which a diagnosis of diverticulitis was made (77 patients, 34 male. Mean age: 65,5 years; range: 22 - 90 years). The patients had relevant cardiovascular risk factors in 45,5 % of the cases, ischemic cardiomyopathy in 18,2 %, neurological disease in 9 %, chronic renal failure in 6,5 %, endocrinopathy in 6,5 %, neoplasms in 5,2 % and pneumopathy in 3,9 % of them.

Diverticulitis occurred in the sigmoid colon in 87 % of the cases (13 % in the descending colon). Medical therapy was prescribed in 87 % of the patients and surgery was needed in the remaining 13 %, with an average hospital stay of 8,4 days (range: 1 – 29 days). Our data did not reveal a statistically significant difference between the days with high or low barometric pressure in terms of diverticulitis diagnosis ($p = 0,135$). We also did not find any relation between diverticulitis and barometric trends ($p = 0,851$).

As far as we know, this is the first study addressing the possible influence of atmospheric pressure on diverticular disease. Although we have not been able to prove any relation between diverticulitis and barometric pressure, we think that this results should be published in order to shed some light into the knowledge

of pathophysiology of diverticulitis, a condition that has become widespread in the 20th and 21st centuries.

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