

SODA WATER TEST IN PATIENTS WITH GASTROESOPHAGEAL REFLUX DISEASE

Authors: Soifer Luis MD, Dima Guillermo MD, Peralta Daniel MD, Besasso Horacio MD

Institution: Division of Gastroenterology, Department of Medicine, C.E.M.I.C., Buenos Aires, Argentina.

Introduction: The absence of a protective gastroesophageal barrier in gastroesophageal reflux disease (GERD) pathophysiology could be either a permanent defect or the more common and accepted mechanism of transient lower esophageal sphincter relaxation. In both cases, the belching mechanism is facilitated, thus evidencing impaired gastric air retention capacity.

In order to analyze the relationship between gastric air retention capacity and GERD, a simple soda water test (SWT), with proved reproducibility, was performed. Subjects with and without typical symptoms of heartburn and/or regurgitation were included.

Aim: To assess the sensitivity and specificity of SWT in subjects with and without symptoms of GERD, in relationship with the 24-hour pH measurement.

Material and methods: A prospective cross-sectional descriptive study consisting of 43 subjects (21 females), mean age 48 (± 15 years) was designed. The volume of soda water intake inducing the first belch episode noticed by the patient was measured before 24-hour esophageal ambulatory pH measurement. The subjects were divided into two groups: 22 normal pH study subjects (12 females, mean age 46 ± 15) and 21 pathological pH study subjects (9 females, mean age 48 ± 16).

Volumes were calculated with a measuring container. Patients were asked to swallow every five seconds small amounts of sparkling water while seated. They were asked to stop drinking as soon as they noticed the first belch episode. Then, the minimum volume for inducing belching was measured.

Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), positive likelihood ratio (LR+) and negative likelihood ratio (LR-) were estimated for the following volumes: 50, 100, 200, 300 and 400 ml.

Results:

Volume	Sensitivity	Specificity	PPV	NPV	LR+	LR-
50 (95% CI)	0.306 (0.144- 0.536)	0.981 (0.840- 0.998)	0.917 (0.517- 0.991)	0.671 (0.512- 0.799)	15.889 (0.93- 269.79)	0.708 (0.519- 0.966)
100 (95% CI)	0.313 (0.142- 0.556)	0.800 (0.609- 0.911)	0.500 (0.237- 0.763)	0.645 (0.469- 0.789)	1.563 (0.536- 4.551)	0.859 (0.585- 1.262)
200 (95% CI)	0.625 (0.386- 0.815)	0.520 (0.335- 0.700)	0.455 (0.269- 0.653)	0.684 (0.460- 0.846)	1.302 (0.746- 2.273)	0.721 (0.345- 1.506)
300 (95% CI)	0.813 (0.570- 0.966)	0.400 (0.234- 0.566)	0.464 (0.295- 0.633)	0.769 (0.497- 0.941)	1.354 (0.910- 1.998)	0.469 (0.152- 0.706)

CI)	0.934)	0.593)	0.642)	0.918)	2.015)	1.447)
400	0.875	0.320	0.452	0.800	1.287	0.391
(95%	(0.640-	(0.172-	(0.292-	(0.490-	(0.928-	(0.095-
CI)	0.965)	0.516)	0.622)	0.943)	1.784)	1.611)

Conclusions: Acceptable sensitivity and specificity were obtained with volumes of 300 ml and 100 ml, respectively. This simple and inexpensive method, albeit not perfect, could be useful for ambulatory evaluation of patients with GERD symptoms.