



Gastric myoelectric activity disturbances in patients with gastric and colorectal cancer. Preliminary study

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Background: The gastric myoelectrical activity recording provides information about both fasting, as well as fed gastric motor function. Delayed gastric emptying is linked with changes in EGG: a lower percentage of normal gastric slow waves and a lower postprandial increase in dominant power (DP) of EGG. Investigation of the relationship among motility disorders and dyspeptic symptoms in patients with gastric and colorectal cancer has been very seldom so far.

Purpose: The evaluation of disturbances in gastric myoelectric activity and correlation with dyspeptic symptoms in patients with gastric and colorectal cancer.

Patients and methods: Fourteen patients (out of planned 90) with gastric or colorectal cancer and 30 healthy persons (CG) were enrolled to this study. Every patient underwent surgical operation due to gastric or colorectal cancer. Surface cutaneous electrogastrigraphy (EGG) was performed by 4-channels Polygram NET (Medtronic, Denmark) and were measured in fasted and fed subjects. The study was approved by local medical ethics committee. Each patient signed informed consent. Patient characteristics is presented in table 2.

Table 1. Dyspeptic symptoms	Intensification of symptom
epigastralgia	no - 6 (42.9%) incidental - 2 (14.3%) often - 3 (21.4%) almost always - 3 (21.4%)
a painful sensation of epigastric region	no - 9 (64.3%); often - 5 (35.7%)
heartburn	no - 12 (85.7%); often - 4 (14.3%)
food regurgitation	no - 10 (71.4%); incidental - 4 (28.6%)
early feeling of satiety	no - 11 (78.6%); often - 3 (21.4%)
feeling of food retention in stomach	no - 10 (71.4%); incidental - 2 (14.3%); often - 2 (14.3%)
flatulence in epigastric region	no - 7 (50%); incidental - 2 (14.3%); often - 5 (35.7%)
nausea	no - 9 (64.3%); incidental - 2 (14.3%); often - 3 (21.4%)
vomiting	no - 12 (85.7%); incidental - 1 (7.1%); often - 1 (7.1%)
lose of appetite	no - 12 (85.7%); almost always - 2 (14.3%)

Table 2. Patient characteristics	n=14
sex	M : F = 8 (57.1%) : 6 (42.9%)
median age (range)	62.9 years (40-85 years)
primary site	stomach - 5 (35.7%) colon - 5 (35.7%) rectum - 4 (28.6%)
kind of surgical treatment	gastrectomy - 4 (21.4%) hemicolectomy - 3 (28.6%) abdominal- perineal amputation of rectum - 3 (28.6%) hemicolectomy and anterior resection of rectum - 1 (7.1%) hemicolectomy and excision of recurrence - 1 (7.1%) anterior resection of rectum - 1 (7.1%) explorative laparotomy - 1 (7.1%)
radical surgical treatment	YES- 9 (64.3%) NO - 5 (35.7%)
radiotherapy	YES - 3 (21.4%) NO - 11 (78.6%)

Results: EGG was abnormal in 12 studied patients. Fasting patients showed decreased the percentage of time of normogastria (52.8 ± 24.5 vs. $82 \pm 12.3\%$, $p=0.02$) and slow wave coupling (SWC) (61.1 ± 17 vs. 67 ± 18 , $p=0.01$) with increased dominant power (DP) (13.3 ± 1 vs. 11.1 ± 1.1 , $p=0.0001$). (Fig. 1) In fed patients: % of normogastria, DP, dominant frequency (DF), SWC did not improve on the contrary for the CG in which all of these parameters increased ($p < 0.05$). Answers of questionnaire of dyspeptic symptoms are collected in table 1.

Correlation. Parameters of EGG correlated with dyspeptic symptoms: positively fasting dominant frequency of slow wave (DF) with feeling of food retention in stomach ($R=0.55$, $p=0.03$) and negatively % of tachygastria with lose of appetite ($R=-0.53$, $p=0.04$). In fasting period % of arrhythmic positively correlated with vomiting ($R=0.6$, $p=0.02$).

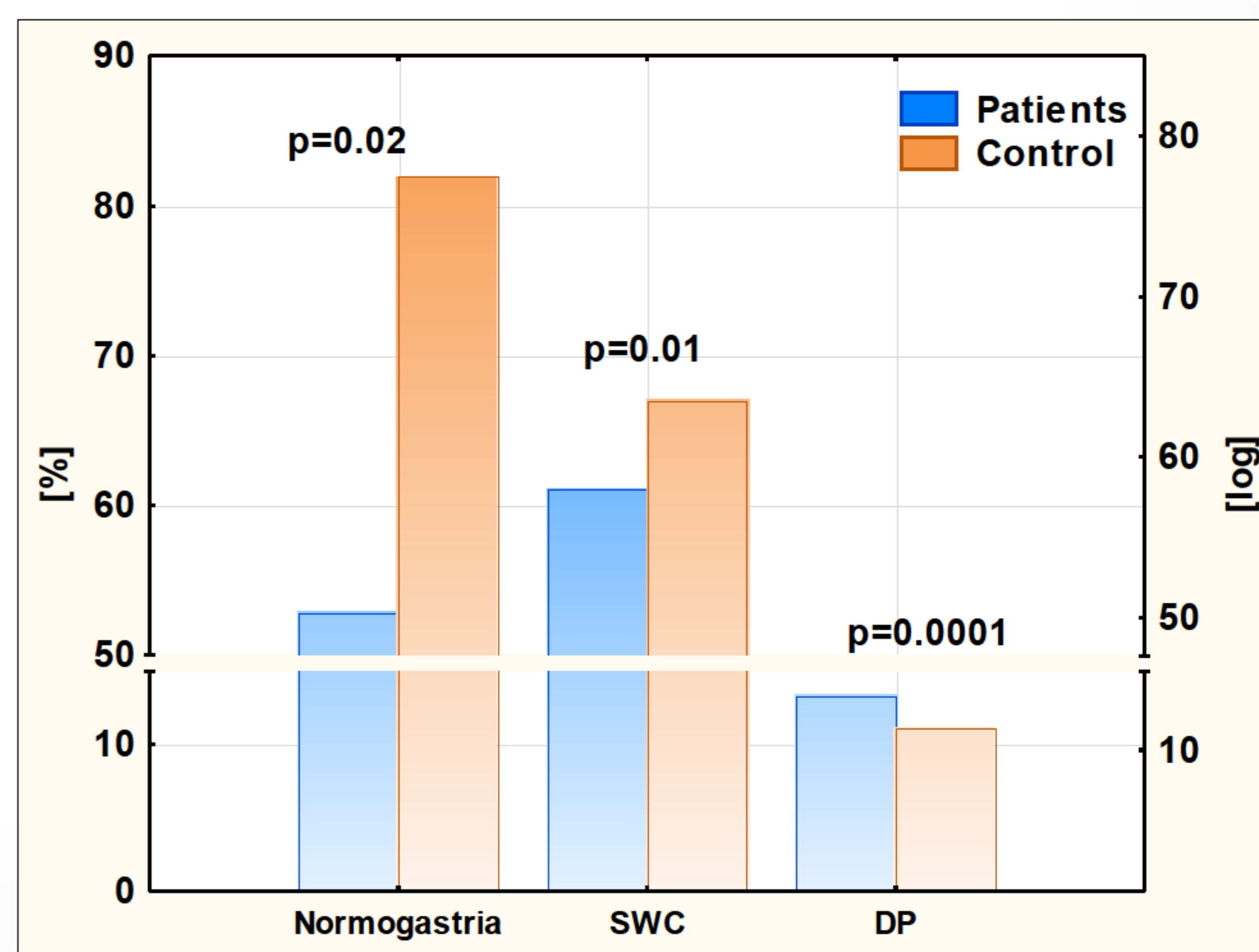


Figure 1. EGG parameters in cancer patients and control

Conclusions: Gastric and colorectal cancer affects gastric myoelectric activity by decreasing normogastria, slow wave coupling. Gastric myoelectric motility response to food in patients was abolished. Observed gastric electric motility dysfunction may be a result of autonomic system activity disturbances induced by neoplastic processes.

