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S. Haj Kheder, J. Heller, jk. Bär, A. Wutzler, BA. Menge, G. Juckel

PII: S0165-0327(17)30824-8
DOI: http://dx.doi.org/10.1016/j.jad.2017.09.049
Reference: JAD9257

To appear in: Journal of Affective Disorders

Received date: 23 April 2017
Revised date: 14 August 2017
Accepted date: 24 September 2017

Cite this article as: S. Haj Kheder, J. Heller, jk. Bär, A. Wutzler, BA. Menge and G. Juckel, Autonomic dysfunction of gastric motility in major depression, Journal of Affective Disorders, http://dx.doi.org/10.1016/j.jad.2017.09.049

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Autonomic dysfunction of gastric motility in major depression

HAJ KHEDER S1, HELLER J2, BÄR JK3, WUTZLER A1, MENGE BA1, JUCKEL G5

1 Department of Medicine II, St. Josef-Hospital, Ruhr-University Bochum, Bochum, Germany
2 LWL-Clinic for Forensic Psychiatry, Herne, Germany
3 Department of Psychiatry and Psychotherapy, Jena University Hospital, Jena, Germany
4 Department of Medicine I, St. Josef-Hospital, Ruhr-University Bochum, Bochum, Germany
5 Department of Psychiatry, Ruhr University Bochum, LWL University Hospital, Bochum, Germany

Key words
Major depression; autonomic nervous system; 13C-acetate breath test; gastric emptying; enteric nervous system.

Abbreviations
AAP, atypical antipsychotics; AD, antidepressant; ANOVA, analysis of variance; ANS-score, Autonomic Nervous Symptom-score; BDI, Beck Depression Inventory; CGI, Clinical Global Impression; DOB, “Delta over Baseline”; EGG, Electrogastrogram; GEC, Gastric Emptying Coefficient; HAMD-21, Hamilton Depression Scale-21; MADRS, Montgomery Asberg Depression Scale; MDD, Major depressive disorder; NDIRS non-dispersive infrared spectroscopy; NDRI, norepinephrine–dopamine reuptake inhibitor; PD, Parkinson’s disease; SSRI, selective serotonin reuptake inhibitor; SNRI, selective noradrenalin reuptake inhibitor; TCA, Tricyclic antidepressants.

Abstract
Background
Patients suffering from major depressive disorder (MDD) often complain about somatic symptoms. Cardiac complaints have been examined predominantly. However, gastrointestinal complaints are also reported frequently and are associated with worse outcomes. The research concerning changes in gastric motility of these patients is rather sparse. The aim of our study was to determine dysfunction of gastric motility and gastrointestinal symptoms in MDD. The duration and severity of MDD were examined regarding its influence over gastric emptying.

Methods
Gastric emptying was determined by a 13C-acetate breath test in patients with MDD (n = 29) and healthy control subjects (n = 51). Prior to this, depressive illness was operationalized using external and self-assessment scales (HAMD-21, MADRS, BDI, CGI). Whether the severity or duration of MDD influenced the gastric emptying parameters was examined using Spearman’s correlation. In addition, autonomic complaints were recorded by means of an ANS score. Each ANS score item was determined using a Mann-Whitney U or Kruskal-Wallis test concerning the gastric emptying parameters.

Results
There was a significant difference in the parameters of the maximum gastric emptying rate (Tmax) and gastric half emptying time T1/2h between patients with MDD and healthy control subjects (Tmax 66.21 min vs 53.35 min, p < 0.006, T1/2h 207.59 min vs 133.27 min, p < 0.005). There was a significant negative correlation between Tmax and the severity of MDD determined with the depression rating scales BDI (Spearman’s rank -0.521, p = 0.013) and HAMD-21 (r -0.384, p = 0.048). No correlation was found between the duration of MDD and the maximum gastric emptying rate (r -0.125, p = 0.519) and gastric half emptying time (r -0.62, p = 0.749).
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