

Endoscopic findings and psychometric abnormalities: what is the relationship in upper endoscopic outpatients?

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Abstract

Background. Psychological disorders are often associated with diseases of the upper digestive tract. Although emotions can influence gastrointestinal function in healthy individuals, psychological setting in upper gastrointestinal patients are unclear. We evaluate the psychological alterations prevalence in outpatients submitted to upper endoscopy.

Materials and Methods. A total of 130 patients (50 males and 80 females; mean age 54±17 years) submitted to upper gastrointestinal endoscopy, were enrolled over the period May 2009 - September 2010. Subjects were asked to complete questionnaires before endoscopic examination. Alexithymia, anxiety, depression and coping style were assessed using the Toronto Alexithymia Scale, Spielberger Trait Anxiety Inventory, Beck Depression Inventory and Coping Inventory for Stressful Situations, respectively.

Results. Coping impairment, Alexithymia, Anxiety and Depression were found respectively in 80.3%, 25.4%, 24.6% and 17.2%, often in association. Task-oriented, emotion-oriented and avoidance-oriented alterations were found in 41.8%, 40% and 30.6%, respectively. No correlations were demonstrated between diagnosis of upper gastrointestinal disease and psychometric results.

Conclusions. In our study, a high prevalence of psychometric alterations in gastrointestinal outpatients was unconnected with endoscopic findings, especially considering coping style alterations. This aspect should be taken into account in patients management and a long-term follow-up should clarify a possible role of these factors in patients prognosis and compliance. *Clin Ter 2015; 166(6):238-243. doi: 10.7417/CT.2015.1894*

Key words: alexithymia, anxiety, coping style, depression, psychological disorders, upper endoscopy

Introduction

Psychological factors are considered to play a predominant role in functional gastrointestinal disorders (FGIDs) (1, 2). Early life experiences, adult stressors (e.g., divorce or bereavement), social support and other social learning experiences can affect both an individual's physiologic and

psychological responses, including distress, psychiatric disorders, and beliefs and coping strategies (3). The increase in depression, anxiety, neuroticism, somatization, hypochondriasis, emotional disorders and stress are demonstrated, in several conditions such as irritable bowel syndrome (IBS), functional dyspepsia (FD), gastro-oesophageal reflux disease (GERD) and cyclic vomiting syndrome (CVS) (3-9). Considering these relationships, some psychological techniques, such as hypnotherapy, relaxation techniques, biofeedback and cognitive behavior therapy, have been adopted in order to treat this patients being likely to have a therapeutic value by improving the general well-being and quality of life of patients with gastrointestinal (GI) symptoms and also influence the outcome of medical and surgical treatment (10-13).

Although it is well known that emotions can influence FGIDs in healthy individuals, it remains unclear which are their pathophysiologic relationships (14). Several investigations have been devoted to study psychiatric disorders in functional disorders. Instead, the aim of our study was to assess the prevalence of psychological disorders in upper gastroenterological outpatients and to relate findings with the organic and functional disease.

Materials and Methods

This cross sectional descriptive study, deals with a total of 130 consecutive outpatients who attended the Department of Surgical Sciences, over the period May 2009 - Sept 2010. The contact is occurred in order to perform an upper intestinal endoscopy for gastrointestinal symptoms were invited to participate in the study. All patients were recruited from the Endoscopy Unit of "Sapienza" University of Rome and were eligible for inclusion unless they were unable to complete the questionnaires by themselves, due to dementia or language difficulties, did not use psychoactive drugs or had a diagnosed psychiatric disorder (15). Additional exclusion criteria were: having already completed psychometric tests, being a doctor or a psychologist, having a previous diagnosis of functional pathology of the upper digestive

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Table 1. Clinical indications to upper endoscopy of intention to treat patients patients.

Indications	N. Pts
Epigastric pain	64
Heartburn	21
Suspected celiac disease	13
Follow-up	11
Esophageal varices	3
Anemia	3
Other	15

tract. To obtain a complete view on psychological factors of the enrolled patients, we chose a package of validated self-administered questionnaires that evaluated: alexithymia, anxiety, depression and coping style. The endoscopic and histological findings were also acquired to highlight a possible link with psychosocial predictors. Clinical indications of the participants were reported on Table 1.

An informed written consent to participate to the study was obtained by all the patients. The study protocol conformed to the ethical guidelines of the 1975 Declaration of Helsinki.

Neuropsychological assessment

All patients underwent an extensive neuropsychological assessment, including the Beck Depression Inventory-II (BDI-II), the State-Trait Anxiety Inventory Y1-Y2 (STAI), the Toronto Alexithymia Scale-20 items (TAS-20) and the Coping Inventory for Stressful Situations (CISS) (16, 17).

Depression was assessed with the BDI-II, which includes 21 items with negative and positive contents. Patients had to mark the answer that best suits their present state of mind and they were informed that no right or wrong answers existed. Each answer was given 1 to 3 points. A high total score corresponds to the presence of elevated depressive symptoms.

Anxiety was detected with the STAI, a widely used anxiety rating scale (18, 19). It consists in a 40 items self-administered questionnaire that is composed of two parts: the state anxiety scale consists of 20 items that evaluate current feelings of tension and anxiety, while the 20-item trait scale assesses anxiety levels in general. The scale differentiates anxiety into a) anxiety caused by a specific condition (state anxiety); b) anxiety as a more permanent patient disorder (trait anxiety). The main variables that the questionnaire measured were anxiety, apprehension, nervousness, tension and concern. A high score was associated with higher anxiety level.

Alexithymia was assessed with a validated Italian translation (20) of the latest version of the 20-item TAS-20 that has good internal consistency and test-retest reliability, and a factor structure that reflects three separate, yet conceptually related, facets of the alexithymia construct (16, 21). The 20-item Toronto alexithymia scale is the most widely used self-report measure of alexithymia. This test comprises three scales: difficulty identifying feelings (seven items), difficulty describing feelings (five items), and Externally-Oriented Thinking (eight items). Items are rated using a

5-point Likert scale whereby 1 = strongly disagree and 5 = strongly agree. The total alexithymia score is the sum of responses to all 20 items, and a high score (>60) on the scale reflects a severe difficulty to identify, understand, or describe one's own emotion.

Coping style was assessed with CISS (22). This is a self-report measure containing a 48-item multidimensional measure of coping styles, which assessed the task-oriented (16 items), emotion-oriented (16 items) and avoidance-oriented (16 items) components of coping. Avoidance-oriented coping includes two subcomponents: Distraction and Social Diversion. A high score on each component reflects an higher presence of that coping-style. Two specialists neurologists (GAA and MM) had blindly examined the tests.

Statistical analysis

A standard statistical package was used for comparisons between groups (SPSS® version 19.0, Chicago, IL). Mean \pm standard deviation (SD) were calculated for quantitative variables. Baseline clinical, demographic, and psychological scores were compared across groups, using either χ^2 test in its variety (for categorical variables) and Student *t* test (for quantitative variables), to test statistical significance. Linear regression analysis and correlation matrix were used to evaluate the relationship between variables. A two-tailed probability *p* value or a one tailed *p* value when necessary, were used and considered to be statistically significant at a *p*-value ≤ 0.05 . Multivariate analysis (linear regression) results were used to identify the possible covariates related to the presence of organic pathology. Age, gender indication to upper endoscopy and neuropsychological assessment were data included in the analysis as possible covariates.

Study endpoints

The first aim of this study was to estimate the prevalence of psychological disorders in the upper gastrointestinal outpatients evaluated and their relationship with age or gender. A secondary outcome was to evaluate a discrepancy in the assessment scores among patients with endoscopic or histological abnormalities vs those without, particularly in GERD patients.

Limitations

Although this occurrence was partly provided by the tests, completion of the questionnaires took place just before the endoscopic examination, so the results may had been partly influenced by the surrounding environment and anomalous situation. However, the high compliance to such tests, even if they included a large number of questions during a particularly stressful situation, indicating a strong interest of patients to these topics. In patients with proved disease (endoscopically or histologically), the tests were not repeated after the treatment. This point could still be explored in subsequent studies. The study does not include a healthy control group. However, in working-age healthy population, the prevalence of this disorders ranges between 5% and 17%, and, at least in a sample of the Finnish population, was associated with lower Health Related Quality

of Life (23). It was not possible to accurately determine the onset time of gastroenterological symptoms.

Results

A total of 122 patients (48 M/74 F, mean age 53.3 ± 17 years) out of 130 (93.8%) complete the questionnaires demonstrating a significant compliance. Eight patients were excluded from the analysis (six for not having completed, one refused and one for having randomly completed the questionnaires compilation).

Neuropsychological assessment analysis

A total of 13 patients who completed the questionnaires, resulted in the normal range, however coping style, alexithymia, anxiety and depression were found to be impaired in 80.3%, 25.4%, 24.6% and 17.2%, respectively, even in association. Among the altered CISS tests, task-oriented, emotion-oriented and avoidance oriented alterations were found in 41.8%, 40% and 30.6%, respectively.

A correlation was found between age and TAS-20 test ($p = 0.001$) (Fig. 1).

However, there was no significant difference between patients with organic disorders or FGIDs, among those with psychological impairment (Fig. 2).

Considering the 122 patients examined, an altered coping task oriented test (51 patients, 41.8%) together with the altered TAS-20 (14 out of 51 patients, 27.4%) were most frequently observed. There were no significant differences between genders with regard to: indications, presence of macroscopic or histological changes and the prevalence of Hp infection.

Upper endoscopy results

57 patients showed the presence of relevant finding at upper endoscopy: 49 antropathy, 30 oesophagitis, 5 duo-

denitis, 1 gastric ulcer and other (Barrett oesophagus, gastric polyps, etc.), even in association. Moreover in one patients a diagnosis of gastric adenocarcinoma was made and in three the clinical suspicion of celiac disease was confirmed.

Intestinal biopsies were performed in 96 patients (78.6%), because of the mucosal appearance or indications, revealed histological changes as follows: chronic superficial gastritis (40 patients), chronic atrophic gastritis (4 patients), intestinal metaplasia (2), celiac disease (3) Barrett esophagus (1) and other (seven patients) even in association. H. pylori infection was found in 15 patients.

Relation between endoscopic findings and neuropsychological assessment

Among 122 enrolled patients, 56 were diagnosed suffering an upper gastrointestinal tract organic disease. Patients without organic disease tended to be younger (50.8 ± 15.9 vs 56.3 ± 17.8 , $p=0.049$), whereas the two groups were similar regarding gender and indication to upper endoscopy. Selecting patients according to GERD related symptoms, we extrapolated 84/122 patients. No statistically significant psychometric differences were highlighted among GERD patients with or without organic pathology, confirmed during endoscopy.

No differences were found between patients with and without organic disease and with and without alterations in neuropsychological assessment. However, by analysing the

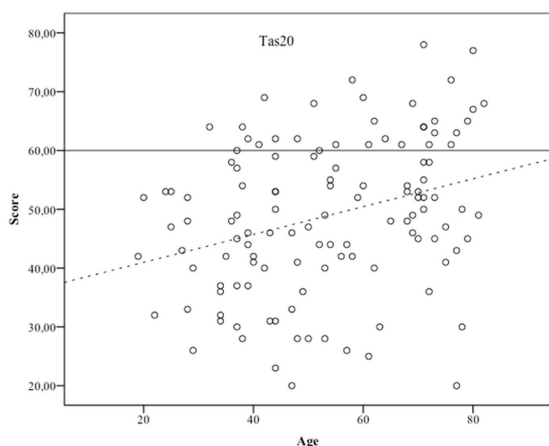


Fig. 1. Toronto Alexithymia Scale-20 age-correlation. Continuous line: normal range. Dashed line: trend-line.

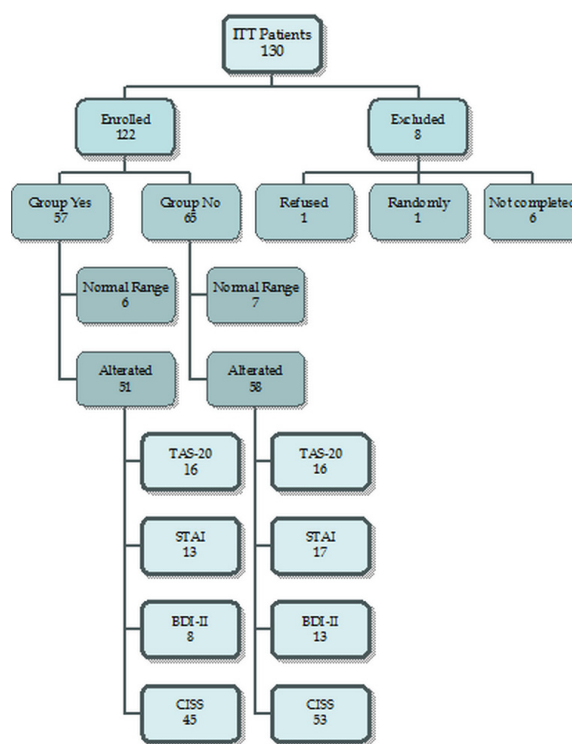


Fig. 2. Study flow-chart with the intention to treat patients distribution according to the psychometric altered questionnaires (Toronto Alexithymia Scale-20; State-Trait Anxiety Inventory Y1-Y2; Beck Depression Inventory-II; Coping Inventory for Stressful Situations).

Table 2. Multivariate analysis (linear regression) results.

	p	Odds Ratio	95% Confidence Limits	
			Lower	Upper
Age	0.095	1.021	0.996	1,047
Gender	0.360	0.695	0.318	1,516
Indication to upper endoscopy	0.415	1.065	0.916	1,238
Beck Depression Inventory-II	0.136	0.400	0.120	1,335
State-Trait Anxiety Inventory Y1	0.815	0.884	0.316	2,475
State-Trait Anxiety Inventory Y2	0.716	1.298	0.318	5,300
Coping Inventory for Stressful Situations task oriented	0.806	0.907	0.413	1,988
Coping Inventory for Stressful Situations emotion oriented	0.758	1.197	0.380	3,768
Coping Inventory for Stressful Situations avoidance oriented	0.714	0.818	0.280	2,389
Toronto Alexithymia Scale-20	0,524	1.356	0.532	3,459

(AU. With reference to the 95% Confidence Interval (95%CI), it must be realized that statistically speaking a CI is an index of data dispersion around their central location, say the Mean, as it is the Standard Deviation (SD which represents the 68%CI of the distribution bilaterally to the average. Accordingly, the 95%CI is an estimate whose value is given by a single number which is preceded by the symbol ±, as it is for the SD. As a matter of fact, the 95%CI is calculated by the formula: 95%CI = SD x 1.96, the latter number being the Critical Value of the Integral of the Gaussian Curve at a p=0.05 for at least 200 Degrees of Freedom. When the 95% of the dispersion around the Mean is expressed by its lower and upper limits (say, as a 'range', the estimate must be called 95% Confidence Limits (95%CL).

relationship between the impairment of neuropsychological assessment and location of organic disease (oesophagus, stomach or duodenum); avoidance-oriented components of coping (r=-0.2, p=0.013) and STAI Y2 results (r=-0.21, p=0.01) resulted inversely related to the presence of organic disease. The multivariate analysis confirmed that depression, anxiety, alexithymia and coping style were not independent related to the presence of organic pathology of upper gastrointestinal tract (Table 2).

Discussion

Although it is well known that emotions can influence gastrointestinal function in healthy individuals, psychosocial makeup of upper gastrointestinal patients remain unclear. Many psychosomatic based studies, in the past, have attempted to assess the relationship between personality traits and gastrointestinal illnesses. Holtmann et al. (17), found that subjects who were considered to have a higher level of impulsivity and expressed emotions more freely were more likely to react with an increase in gastric acid output when subjected to stress simulated by a problem-solving session than patients with low level of impulsivity. Talley et al. (21) found that reflux symptoms were reported by 42% of psychiatric patients as compared to 5% of normal controls. Increased gastric acid secretion has been described in subjects with a higher tendency towards emotional lability. Bradley et al. (24) found that patients who were chronically anxious and exposed to prolonged stressful stimuli may be more likely to perceive low-intensity oesophageal stimuli as painful reflux symptoms. In the Jansson study (25), whereas the endoscopic findings have not been investigated, a high correlation between anxiety, depression and reflux symptoms was determined. Thus, research on the psychosocial factors of FGIDs patients indicates that:

1. psychological stress exacerbates GI symptoms;
2. psychosocial factors modify the experience of illness and illness behaviors such as health care seeking;
3. functional GI disorder may have psychosocial consequences (this is understood in terms of one's health-related quality of life) (26).

For these reasons, considering that ours was a selected population, during the study design, we expected a higher prevalence of psychosocial abnormality in "functional" patients. In fact, the prevalence of personality alterations was found higher than expected, especially considering coping alterations. These expectations have been partly contradicted by analyzing data. In fact, in our study 24.6% of patients had a STAI altered test, exceeding the prevalence rate in general population that, for anxiety disorders, ranges between 3 and 12% (27). As previously noted by Smith (28) in the study of patients with IBS, our data demonstrates that the high prevalence of psychometric alterations in upper gastrointestinal outpatients is not strictly associated with an organic pathology, especially considering coping style alterations. This observation could be useful in the evaluation of patients candidate to undergo upper endoscopy with an appropriate indication. In fact in the last 30 years, digestive endoscopy (DE) has mainly become an outpatient procedure prescribed by different medical specialties in an open-access system (29) and this allows physicians to directly schedule elective, common endoscopic procedures for their patients without prior consultation. Therefore the application of appropriate indications for DE should conserve limited resources, increases relevant findings rate and decreases waiting lists for endoscopic procedures.

Considering the prevalent personality of upper gastroenterological outpatients, psychological factors should be equally considered in "functional" and "organic" upper gastrointestinal outpatients. Also, there are no differences in psychometric setting in GERD patients with or without

organic pathology diagnosed during endoscopy. Fully exploiting the potential of psychological therapy (30), might be useful to know how to approach, how to explain briefing before examinations and how to improve adherence to follow-up. Further studies are warranted to assess if the treatment of underlying disease could modify the psychometric scores and to find the impact of psychosocial factors on the appropriateness of esophagogastroduodenoscopy (EGDS) in clinical practice (31).

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Abbreviations

Beck Depression Inventory-II; BDI-II
Coping Inventory for Stressful Situations: CISS
Cyclic vomiting syndrome: CVS
Functional dyspepsia: FD
Functional gastrointestinal disorders: FGIDs

Gastrointestinal: GI
Gastro-oesophageal reflux disease: GERD
Irritable bowel syndrome: IBS
State-Trait Anxiety Inventory Y1-Y2: STAI
Toronto Alexithymia Scale-20: TAS-20

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