FUNCTIONAL GASTROINTESTINAL DISORDERS: RELATIONS BETWEEN PSYCHOSOCIAL FACTORS, SYMPTOMS AND SENSORIMOTOR DISTURBANCE

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ABSTRACT

Although a vast literature attests to the belief that psychosocial disturbance is an important component of functional gastrointestinal disorders (FGID), the relation of life stress, psychological distress and personality to the development of these disorders is poorly understood. The broad objective of this thesis is to provide data on relations between psychosocial factors and FGID, especially irritable bowel syndrome (IBS) and functional dyspepsia (FD), in representative outpatient samples. Issues not previously addressed are examined in a series of studies. The first two studies are concerned with relations between psychosocial factors, extraintestinal (somatic) symptoms and the number and type of FGID syndromes present at consultation and, in IBS patients, the prospective relation of psychosocial factors to changes in symptom intensity over 16 months. The last three studies relate psychosocial factors to gastrointestinal (GI) transit, motor, and sensory function in FGID, abnormalities in these parameters representing the putative origin of symptoms in FGID. In total, 350 patients participated, representing a 95% participation rate.

Important features of the methodology include the use of a recently standardised symptom-based classification system for FGID, an objective and reliable interview-based life stress instrument (The Life Events and Difficulties Schedule), and sophisticated and sensitive technologies to assess GI transit, motor and sensory function. Novel measures, which conceptually take into account the chronic, fluctuating and recurrent course of IBS and FD syndromes, and the tendency of these syndromes to coexist, are also included. Thus, measures of symptom outcome assess the number of syndromes present, while the symptom intensity variable reflects the severity and frequency of both FD and IBS symptoms, if both are present. Similarly,

with respect to altered transit, and motor and sensory function, physiological outcome variables reflect not only the presence of an abnormality but the number of regions affected, and the type and number of abnormalities present.

Cross-sectional findings showed for the first time that psychosocial disturbance is associated with FGID symptomatology in a quantitative manner, that chronic life stress threat is central to this process and this stress-related process is a prominent feature of a particular group of syndromes (ie IBS/FD) defined primarily by the presence of pain and discomfort. A combination of psychological, social and biological factors combined to predict the number of FGID syndromes present at entry into the study. Prominent among them was an angry, reactive and anxious (neurotic) personality, chronic life stress threat, increased coping, poor emotional support and increased age. In addition to a greater number of FD/IBS syndromes, individuals with an anger-reactive response style had experienced more intense pain and discomfort, and displayed more complete sensorimotor disturbance.

Longitudinal data demonstrated (also for the first time) the strength, consistency and unequivocal direction of the relation of chronic threat to symptom intensity over time. Almost all of the within subject variance in symptom intensity levels (assessed on 3 occasions over a 16 month period) was explained by the severity of chronic threat during the previous 6 months or more. For 76% of IBS patients, the presence vs the absence of one or more highly threatening chronic stressors predicted with considerable precision, the long-term clinical outcome. Thus, no patient exposed to even one such stressor improved clinically (ie by at least 50%) over the follow-up period, while in contrast, all patients who improved clinically did so in the absence of such a stressor. For 24% of patients, however, failure to improve clinically could not

be explained by any psychological, social (including life stress) or demographic factor included in this study.

Key risk indicators of a poor outcome at 16 months were identified - chronic life stress threat, the severity of baseline GI symptomatology, and female gender. Life stress is important because it alone determined the magnitude and direction of change in symptom intensity over time, while the severity of baseline GI symptomatology revealed the extent of improvement required to achieve a recovery, and female gender predicted the presence of a larger number of FD/IBS syndromes in women long-term. Widespread hypomotility, which was almost exclusive to women in this study, represents one factor that may inhibit improvement (or rate of improvement) for women over time.

Finally, these findings have identified a psychophysiological subgroup, with underlying psychosocial, motor (and perhaps also sensory) dysfunctions that are more specific for women than men, and which does not seem to be distinctive of any particular FGID subgroup.

STATEMENT OF ORIGINALITY

The studies of this thesis represent original research undertaken by the author in the University of Sydney Department of Psychological Medicine and The Department of Medicine and Gastroenterology at Royal North Shore Hospital, Sydney, Australia.

The author was responsible for the initiation and conduct of the work which was performed under the joint supervision of Professor C C Tennant and Professor J E Kellow.

All psychosocial data were collected, processed and interpreted by the author. This included an extensive life event stress and emotional support interview and the presentation of these data as vignettes to an experienced team of life stress raters. The administration and scoring of psychological instruments and the interpretation of test scores were also carried out personally. Data preparation and statistical analysis was performed by the author with the assistance of Dr. M Jones and Ms C-A Badcock, Biostatisticians, Department of Clinical Computing and Health Information Systems, Royal North Shore Hospital, and Dr A Taylor, Statistician, Macquarie University, Sydney, Australia.

Scintigraphic studies of gastrointestinal transit were performed by the Department of Nuclear medicine, Royal North Shore Hospital, and with the particular assistance of Dr A Scott, Dr R Höschl and Mr B Shuter. Manometric and sensory studies of the small bowel were performed in the Gastrointestinal Investigation Unit of Royal North Shore Hospital by Dr. P Evans.

STATEMENT OF ETHICS

All subjects who participated in these studies gave written informed consent. The protocols were approved by the Medical Research Ethics Committee of the Royal North Shore Hospital, Sydney, Australia.

PUBLICATIONS

The following papers have been published, or submitted for publication, as a result of the studies which form the basis of this thesis.

Original Articles:

1. Bennett EJ, Kellow JE, Cowan H, Scott A, Shuter B, Langeluddecke P, Hoschl R, Jones M, Tennant C. Suppression of anger and gastric emptying in patients with functional dyspepsia. Scand. J. Gastroenterol. 1992;27:869-874.

2. Evans PR, Bennett EJ, Bak Y-T, Tennant C, Kellow JE. Jejunal sensorimotor dysfunction in irritable bowel syndrome - clinical and psychosocial features. Gastroenterology 1996; 110:393-404.

3. Bennett EJ, Piesse C, Palmer K, Badcock C-A, Tennant CC, Kellow JE. Functional Gastrointestinal disorders: psychological, social and somatic features. Gut 1998;42:414-20.

4. Bennett EJ, Tennant CC, Piesse C, Badcock C-A, Kellow JE. Level of chronic life stress predicts clinical outcome in irritable bowel syndrome. Gut 1998;43:256-261.

5. Bennett EJ, Evans P, Scott A, Badcock C-A, Shuter B, Höschl R, Tennant C, Kellow JE. Psychological and gender features of impaired gut transit in functional gastrointestinal disorder. Gut 2000;46:83-87.

Abstracts

1. Bennett EJ, Kellow JE, Scott AM, Langeluddecke PM, Hoschl R, Jones MP, Tennant C, Functional dyspepsia: association between suppression of anger and alterations in gastric emptying. Gastroenterology 1992;102:A423.

2. Bennett EJ, Piesse C, Evans P, Badcock C, Tennant C, Kellow JE. Relationships between psychological factors and number and type of functional gastrointestinal disorder subgroups. Gastroenterology 1995; 108:A569.

3. Bennett EJ, Evans P, Badcock C-A, Tennant C, Kellow JE. Psychosocial and gender features of impaired gut transit in functional gastrointestinal disorder. Gastroenterology 1996;110:A632.

4. Bennett EJ, Evans P, Palmer K, Tennant CC, Kellow JE. Extra-intestinal symptoms, emotional distress and functional gastrointestinal disorder subgroups. Gastroenterology 1996;110:A632.

5. Bennett EJ, Badcock C-A, Tennant CC, Kellow JE. Inter-relationships among functional gastrointestinal disorders. Gastroenterology 1998;114:A720.

In addition, aspects of this work were delivered at the following national and international meetings:

1. American Gastroenterological Association Digestive Disease Week, San Francisco, California, USA, May 10-13, 1992.

2. American Gastroenterological Association Digestive Disease Week, San Diego, California, USA, May 14-17, 1995.

3. American Gastroenterological Association Digestive Disease Week, San Francisco, California, USA, May 19-22, 1996.

4. Australian Gastroenterology Week, Adelaide, September 9-13, 1996.

5. American Gastroenterological Association Digestive Disease Week, Washington, D.C., USA, May 11-14, 1997.

6. International College of Psychosomatic Medicine, 14th World Congress on Psychosomatic Medicine, Cairns, Australia, 31 August - 5 September, 1997.

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I am sincerely grateful to Prof. Kellow, without whose expertise, guidance and encouragement this project would not have been possible. His meticulous attention to detail and careful scrutiny of my work throughout has been inspirational.

I am grateful to Dr. Peter Evans who conducted the manometric studies with great skill and performed data analysis of the relevant motor and sensory parameters. The expertise and time contributed by Mr B. Shuter, Dr. R. Höschl and Dr A Scott of the Department of Nuclear Medicine, Royal North Shore Hospital, is also gratefully acknowledged.

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LIST OF ABBREVIATIONS

CD	chronic difficulty
CNS	central nervous system
DL	dysmotility-like dyspepsia
DT	delayed transit
EIS	extraintestinal symptoms
FBD	functional bowel disorders
FC	functional constipation
FD	functional dyspepsia
FGID	functional gastrointestinal disorder(s)
GE	gastric emptying
GI	gastrointestinal
IBS	irritable bowel syndrome
ITT	intestinal transit time
LEDS	Life Events and Difficulties Schedule
MMC	migrating motor complexes
NT	normal transit
RL	reflux-like dyspepsia
RoE	rate of emptying
SE	standard error
SI	symptom intensity
STAI	State-Trait Anxiety Inventory
T1/2	half emptying time
UL	ulcer-like dyspepsia
UFD	unspecified functional dyspepsia
UFBD	unspecified functional bowel disorder

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