Anamnestic and psychological features in diagnosis and prognosis of functional abdominal complaints: a prospective study

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SUMMARY Psychological and anamnestic data from 308 patients were collected to investigate whether patients with abdominal complaints from organic causes could be distinguished psychologically or by their case histories from patients with functional abdominal complaints. Two years later the same patients took part in a follow up study. Only 9% of the patients with functional abdominal complaints became symptom free. Most variables showed no significant difference between the organic and the functional group. The most important variables with predictive value were psychological factors, factors associated with the severity and factors associated with the duration of the complaints.

Abdominal complaints are frequently a reason to refer a patient to an outpatients' clinic for internal medicine. It is often not possible to attribute these complaints to a particular organic abnormality and these cases are referred to as functional complaints. According to general views, certain anamnestic and psychological data can constitute an indication for the diagnosis 'functional'.¹⁻⁴ Scientific grounds to support these views, however, are lacking. Can organic and functional abdominal complaints, therefore, be distinguished by history taking or by psychological investigation?

The prognosis of functional abdominal complaints is poor, and it is not known which factors determine the course of the condition. Which data at first visit, therefore, can have predictive value for the course of functional abdominal complaints. To answer these questions anamnestic and psychological data were collected twice from patients suffering from abdominal complaints, at their first visit to the outpatients' clinic and two years later.

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Methods

PATIENTS

Three hundred and eight of 391 consecutive patients referred to the outpatients' clinic with an abdominal complaint agreed to fill out a questionnaire at their first visit. In the anamnestic part of this questionnaire, patients were asked for biographical data, details of the complaint (nature, localisation, duration, frequency, presence of nocturnal pain, influence of defecation and meals), history of abdominal pain (pain in childhood, pain in parents), medication used, visits to the general practitioner, previous referrals to hospital and previous abdominal surgery. A severity score (varying between 0-9) was determined by taking the sum of the reported frequency of the abdominal complaints (0-3; 0=complaints less than once a month; 3=daily complaints), the limitations (0-3; 0=no limitations, 3=many limitations), and avoidance behaviour as a result of the complaints (0-3; 0=no avoidance, 3=complete avoidance). The psychological aspects were measured with standardised instruments: depression, trait anxiety, selfesteem, and neuroticism as well as the patients' way of coping with problems.

For this purpose Dutch versions of the Selfrating Depression Scale⁵ and the Spielberger Trait Anxiety Inventory⁶ as well as the scale for selfesteem for the Dutch Personality Questionnaire,⁷ and the shortened Inventory for Subjective Health were used.⁸ Coping behaviour was measured by the Utrecht's Coping List.⁹ This standardised instrument is based on the classification of coping behaviour of Westbrook.¹⁰ Finally, questions were asked concerning the presence of psychological complaints, satisfaction with social functioning, work, marriage, and sex, originating from the Maudsley Marital Questionnaire.¹¹

For each patient somatic investigations consisted of a complete physical examination including rectal digital examination, ESR, urine analysis, haemoglobin, serum creatinine, and occult blood testing of faeces. Other investigations took place only when indicated.

Several months after the first visit the patients' files were checked to see whether the abdominal complaints were the result of organic abnormality, and data from these patients were compared with the patients with functional complaints (χ^2 , test of Kruskal-Wallis, and Mann-Whitney U-test).

Two years later the 308 participating patients were invited to take part in a follow up study. Ten patients (seven from the organic, three from the functional group) had died. In one patient functional diagnosis was changed to an organic one and his data were deleted. From the remaining 297 patients 275 (93%) agreed to fill out the questionnaires again and be interviewed. Courses of treatment during the follow up period were recorded.

Two outcome measures were used. For the first outcome parameter the patients were asked to compare their abdominal complaints with the complaints at follow up. They could choose from the following alternatives: completely disappeared, decreased but still present, the same or unchanged, increased or worsened, and as a fifth alternative: changed – that is the original complaint has disappeared but has been replaced by another abdominal complaint. These five follow up categories were used in the univariate analyses (Kruskal-Wallis and Mann-Whitney U-test) to determine the relationship between data collected during the first visit to the clinic and the outcome at follow up. For the second outcome parameter the severity score of the abdominal complaint at follow up was assessed again. This severity score was used as a dependent variable in the multivariate analyses (stepwise regression analysis and discrimination analysis). Changes in variables assessed on both occasions were calculated (Wilcoxon's matched pairs signed-ranks test). All statistical analyses were carried out by the

Mathematical Statistical Advice Department of the University of Nijmegen.

Results

CAN ORGANIC AND FUNCTIONAL ABDOMINAL COMPLAINTS BE DISTINGUISHED BY ANAMNESIS OR BY PSYCHOLOGICAL INVESTIGATION?

An organic diagnosis was made in 81 of the 308 cases (26%): peptic ulcer 26, biliary tract disease 12, proctitis or colitis seven, malignancies six, oesophagitis five, pancreatitis four, others 21. In the organic group there were 34 women and 47 men; in the functional group 149 women and 78 men. Between both groups there were no significant differences in age division and mean age (43 (15) (SD) years) or in mean duration of the complaints (3.5 (6) (SD) years). The median durations were six months (range 1–240) and 12 months (range 1–480) respectively. In most patients (83%) the abdominal complaint compelling them to visit our clinic was pain. In the remaining patients the chief complaints were: difficulties in defecation, nausea, vomiting, etc. No important anamnestic differences were found between the organic and the functional group. The significant differences found in the case of a few variables were of no relevance in diagnosing individual cases.

There did not appear to be differences between the patients with organic complaints and those with functional complaints concerning depression, anxiety, neuroticism, selfesteem, and coping behaviour. Only a sex difference in depression within the organic group was found (Table 1). No differences were found, neither in reported psychological complaints, nor in satisfaction with social functioning, work, marriage, and sex.

COURSE OF FUNCTIONAL ABDOMINAL COMPLAINTS AND ITS PREDICTION

Course of the condition

Only 9% of the patients with functional complaints and 20% of the patients with organic explanations of the complaint became symptom free (Table 2). We therefore report only about the functional group. Treated patients (55%) with functional complaints had a worse outcome than untreated patients ($p<0.05$). Most patients received pharmacological treatment and dietary advice. At their first visit the treated patients were more depressive ($p<0.01$), had a longer complaint duration ($p<0.01$) and had a higher severity score ($p<0.01$) than the untreated patients.

During the follow up period visits to the general practitioner decreased ($p<0.001$), except for patients

Table 1 Scores on psychological tests (means and standard deviations)

	Organic				Functional			
	Male		Female		Male		Female	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
Depression	42.3	8.6*	47.3	6.5*	43.3	10.4	45.8	10.8
Trait anxiety	40.9	10.7	44.1	11.3	42.0	9.9	43.1	11.2
Neuroticism	8.8	4.9	9.9	5.9	10.2	4.8	10.9	5.4
Selfesteem	29.1	5.5	28.3	7.2	27.9	6.9	26.6	7.0

*Male v female $p < 0.01$.

Table 2 Number of patients with organic and functional abdominal complaints for different follow up categories

	Organic		Functional		Total
	n	(%)	n	(%)	
Complaints at follow up					
Disappeared	13	(20)	18	(9)	31
Changed	7	(11)	25	(12)	32
Less	28	(42)	93	(44)	121
Unchanged	17	(26)	55	(26)	72
Worse	1	(2)	18	(9)	19
Total	66	(100)	209	(100)	275

with worsened complaints. There was improvement in depression ($p < 0.001$), anxiety ($p < 0.05$), and neuroticism ($p < 0.01$), particularly in patients with less complaints at follow up (Figure). The other variables remained unchanged. In the total group reductions in severity of complaints were significantly correlated with improvement in depression and in neuroticism (Spearman $r = 0.22$ and $r = 0.28$ respectively).

PREDICTION OF THE COURSE

Univariate analyses

The following variables at first visits appeared unfavourable for the outcome ($p < 0.001$): a large number of complaints, earlier specialist consultation, experience of the complaints as serious, a high severity score, a high depression score and a high score on neuroticism. Further ($p < 0.01$): a long complaint duration, a history of abdominal complaints for one or both of the parents, frequent visits to the general practitioner, the presence of the complaint eructation, and unsuccessful behaviour in reducing the complaints. Also unfavourable ($p < 0.05$) were: the presence of other physical complaints besides the abdominal ones, continuous pain, a history of abdominal complaints, use of sleeping pills, the presence of the complaint food intolerance,

a low selfesteem score, worrying about health, worse social functioning and attributing complaints to organs in the abdomen.

To determine the relationship between the various significant variables in the univariate analyses, factor analysis (principal factors with varimax rotation) was performed. A four factor solution appeared to be the best (four factors had a proportion greater than 0.1). The first factor, which explained most of the variance (42%), could be named as a psychological one, two others as duration and severity and a fourth factor as illness behaviour (worrying about health, visits to the general practitioner).

Multivariate analyses

To find combinations of variables at the first visit with predictive value for the severity of the complaints at follow up, stepwise regression analyses were carried out with the severity score at follow up as dependent variable. With a combination of four variables a correlation of 0.59 was reached. This means that a combination of a high neuroticism score, severe symptoms, use of sleeping pills and earlier specialist consultation has a strong connection with severity of complaints at follow up. The relative contribution of each of these variables was always significant. R-square analysis revealed that earlier specialist consultation could also be replaced by complaint duration without loss of explained variance.

Because the severity score at first visit had the largest contribution to the aforementioned correlation with the severity score at follow up, a stepwise regression analysis was also performed without this variable. With a combination of three significant contributing variables (neuroticism, earlier specialist consultation, and depression) a correlation of 0.50 could be obtained with the severity score at follow up. So depression largely replaces the severity at first visit.

On the basis of the first mentioned four variables, it proved possible, with the help of a stepwise discriminant analysis, to predict which patients at follow up were likely to experience discomfort at least once a day (high severity score) (74.5% correct predictions) and which less frequently (low severity score) (72.1% correct).

Looking for an improvement of the prediction 'daily complaints' with a combination of two variables collected during the first visit to the clinic, we found the following combination effective: a high score on neuroticism and inability to manage job or housekeeping. For 38 of the 42 patients who fulfilled these criteria this prediction was correct; the *a priori* chance was 55%. In 25 of the 27 patients who fulfilled the criteria of a low score on neuroticism and no history of abdominal complaints in either father or

Figure Scores on depression, anxiety, neuroticism, and self-esteem (means and standard deviations) at the first and at the follow up investigation

mother the prediction 'less than daily complaints' was correct. For other combinations with predictive value, the number of patients which could be predicted was too small or the increase in predictive value was insufficient.

Discussion

It is important that patients who have functional complaints are identified as early as possible. In the textbooks it is mentioned that the anamnesis can be of assistance here.¹⁻⁴ Because of this a large number of the allegedly discriminant variables were investigated. No substantial differences were found, however, to distinguish the organic group from the functional group on anamnestic or psychological variables.

Reported proportions of organic diagnosis in patients with abdominal complaints vary between about 15 and 60%.¹²⁻¹⁷ We found a proportion of about 25%. In the follow up study only one diagnosis of functional complaints had to be rectified. The question remains to what extent a diagnosed somatic abnormality can be considered responsible for the patient's complaints. We have generally been careful

in assigning organic explanations to complaints. For example, a hiatus hernia or colonic diverticulosis and the presence of gall stones or polyps were not accepted as an explanation without due consideration.¹ If we had conducted the investigation more freely in this respect, the organic group would have counted an extra 44 patients. Manipulation of the material grouped in this way did not produce different results.

The prognosis of functional abdominal complaints has been described as rather unfavourable with one exception.¹⁸ Improvement percentages vary between 12 and 50%.¹⁹⁻²⁴ Most patients continue to have more or less complaints. Our results are in agreement with these data. It is remarkable that the course of the complaints with organic explanation is not much better. The distinction between organic and functional may be less relevant as far as the prognosis is concerned.

The treated patients had a worse outcome than the untreated ones. This might be explained by the higher frequency for prognostically unfavourable factors in the treated patient group. We did not perform an intervention study, so conclusions about the efficacy of the treatments can not be drawn. The

results of medical treatments in functional abdominal complaints, however, are generally disappointing,^{25,28} so our observations are, in fact, not very surprising.

There were only minor changes during the follow up period. Improvement in depression, anxiety, and neuroticism occurred particularly in patients with less complaints. The significant correlation in the total group between reduction in severity of the complaint and reduction in depression and neuroticism does not allow a statement about the direction of the relationship. Probably there is a more complex interactive connection where psychological factors are an antecedent as well as a consequent factor of abdominal complaints. Another demonstration of the close connection between severity and depression is the finding that depression could replace the severity score to a large extent as a predictor for the course.

In the analyses concerning the search for predictive factors of the course, two methods were used. In the univariate analyses the five follow up categories were used as criteria, while in the multivariate analyses the severity score at follow up was used as dependent variable. It is important that with these two different ways of analysing mainly the same predictors (psychological, severity, duration) were found.

Our findings are only partly reported by others: that the presence of psychological problems is unfavourable for the prognosis was already reported;¹⁹ that men have a more favourable prognosis than women,²⁵ was not confirmed. Also we did not find a favourable prognosis for painless diarrhoea, or an unfavourable one for older patients or patients with laparotomy in their history.^{20,29} Contrary to Chaudhary and Truelove,¹⁹ but in agreement with others,^{18,29} we found a long duration of complaints unfavourable for the prognosis. These contradictions might be attributed to differences in selection and design of the investigation.

It is worth noting that the same factors which did not contribute to the distinction between organic and functional diseases, have predictive value for the prognosis of functional abdominal complaints.

References

- 1 Boucher IAD, Allan RN, Hodgson HJF, Keighley MRB. *Textbook of gastroenterology*. London: Ballière Tindall, 1984: 1200–7.
- 2 Misiewicz JJ. Irritable bowel syndrome. In: Thomson JPS, Nicholls RJ, Williams CB, eds. *Colorectal disease an introduction for surgeons and physicians*. London: Heinemann 1981: 63–75.
- 3 Phillips S. In: Wyngaarden JB, Smith LH, eds. *Cecil textbook of medicine*. Philadelphia: WB Saunders, 1983: 710–11.
- 4 Schuster MM. Irritable bowel syndrome. In: Sleisenger MH, Fordtran JS, eds. *Gastrointestinal disease, pathophysiology, diagnosis, management*. Philadelphia: WB Saunders, 1983: 880–96.
- 5 Zung WWK. A selfrating depression scale. *Arch Gen Psychiatry* 1965; **12**: 63.
- 6 Spielberger CD, Gorsuch RL, Lushene RE. *STAI Manual for the state trait anxiety inventory*. Palo Alto, Calif: Consulting Psychologists Press, 1970.
- 7 Luteijn F. *De constructie van een Nederlandse persoonlijkheidsvragenlijst (NPV)*. Lisse: Swets en Zeitlinger, 1974.
- 8 Dirken JM. *Arbeid en stress. Het vaststellen van aanpassingsproblemen in werksituaties*. Groningen: Wolters, 1969. (Includes English summary).
- 9 Schreurs PJG, Tellegen B, Willige G van de. *De Utrechtse Copinglijst. Gedrag* 1984; **12**: 101–17.
- 10 Westbrook MT. A classification of coping behaviour based on multidimensional scaling of similarity ratings. *J Clin Psychol* 1979; **35**: 407–10.
- 11 Arrindell WA, Schaap C. The mandsley Marital Questionnaire: an extension of its construct validity. *Br J Psychiatry* 1985; **147**: 295–9.
- 12 Woodhouse CRJ, Bockner S. Chronic abdominal pain: a surgical or psychiatric symptom? *Br J Surg* 1979; **66**: 348–9.
- 13 Manning AP, Thompson WG, Heaton KW, Morris AF. Towards positive diagnosis of the irritable bowel. *Br Med J* 1978; **ii**: 653–4.
- 14 Gomex J, Dally P. Psychologically mediated abdominal pain in surgical and medical outpatient clinics. *Br Med J* 1977; **i**: 1451–3.
- 15 Conen D, Frey D. Colon irritable – ja oder nein? Ist die Anamnese eine Entscheidungshilfe? *Schweiz Med Wochenschr* 1982; **112**: 531–4.
- 16 Kruis W, Thieme Ch, Weinzierl M, Schüssler P, Holl J, Paulus W. A diagnostic score for the irritable bowel syndrome. *Gastroenterology* 1984; **87**: 1–7.
- 17 Ford MJ, Miller PMC, Eastwood J, Eastwood MA. Life events, psychiatric illness and the irritable bowel syndrome. *Gut* 1987; **28**: 160–5.
- 18 Harvey RF, Maurad EC, Brown AM. Prognosis in the irritable bowel syndrome: a 5-year prospective study. *Lancet* 1987; **i**: 963–5.
- 19 Chaudhary NA, Truelove SC. The irritable bowel syndrome: a study of the clinical features, predisposing causes, and prognosis in 130 cases. *Q J Med* 1962; **31**: 307–22.
- 20 Svendsen JH, Munck LK, Andersen JR. Irritable bowel syndrome – prognosis and diagnostic safety. A 5-year follow-up study. *Scand J Gastroenterol* 1985; **130**: 1171–3.
- 21 Holmes KM, Salter RH. Irritable bowel syndrome – a safe diagnosis? *Br Med J* 1982; **285**: 1533–4.
- 22 Waller SL, Misiewicz JJ. Prognosis in the irritable bowel syndrome. A prospective study. *Lancet* 1969; **ii**: 753–6.
- 23 Keeling PWN, Fielding JF. The irritable bowel syndrome: a review of 50 consecutive cases. *J Irish Coll Phys Surg* 1975; **4**: 91–4.
- 24 Havia T, Manner R. The irritable colon syndrome. A follow-up study with special reference to the develop-

- ment of diverticula. *Acta Chir Scand* 1971; **137**: 569–72.
- 25 Holdsworth CD. Drug treatment of irritable bowel syndrome. In: Read NW, ed. *Irritable bowel syndrome*. London: Grune & Stratton, 1985: 223–30.
- 26 Heaton KW. Role of dietary fibre in irritable bowel syndrome. In: Read NW, ed. *Irritable bowel syndrome*. London: Grune & Stratton, 1985: 203–18.
- 27 Myren J, Groth H, Larssen SE, Larssen S. The effect of trimipramine in patients with the irritable bowel syndrome. *Scand J Gastroenterol* 1982; **17**: 871–5.
- 28 Thompson WG. The irritable bowel. *Gut* 1984; **25**: 305–20.
- 29 Sarfeh IJ. Abdominal pain of unknown etiology. *Am J Surg* 1976; **132**: 22–5.