

TOPIC HIGHLIGHT

Paul Enck, Dr, Professor, Series Editor

Irritable bowel syndrome and chronic pelvic pain: A singular or two different clinical syndrome?

Anna Matheis, Ute Martens, Johannes Kruse, Paul Enck

Anna Matheis, Ute Martens, Paul Enck, Department of Psychosomatic medicine, University Hospitals Tübingen, Germany

Johannes Kruse, Department of Psychosomatics, Heinrich Heine University Düsseldorf, Germany

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Correspondence to: Professor Paul Enck, Department of Psychosomatic Medicine and Psychotherapy University Hospitals Tübingen, Frondsbergstr 23, Tübingen 72076,

Germany. paul.enck@uni-tuebingen.de

Telephone: +49-7071-9387374 Fax: +49-7071-9387379

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Abstract

Irritable bowel syndrome (IBS) and chronic pelvic pain (CPP) are both somatoform disorders with a high prevalence within the population in general. The objective was to compare both entities, to find the differences and the similarities related to epidemiology and psychosocial aspects like stressful life events, physical and sexual abuse, illness behaviour and comorbidity. The technical literature was reviewed systematically from 1971 to 2006 and compared. According to literature, IBS and CPP seem to be one rather than two different entities with the same localisation of pain. Both syndromes also are similar concerning prevalence, the coexistence of mental and somatoform disorders, the common history of sexual and physical abuse in the past and their health care utilization. It could be shown that there were many similarities between IBS and CPP. Nevertheless both are traded as different clinical pictures as far. Therefore it seems to be reasonable and necessary to generate a common diagnosis algorithm and to bring gynaecologists and gastroenterologists into dialogue.

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Key words: Irritable bowel syndrome; Chronic pelvic pain; Somatoform disorder; Stressful live event; Physical abuse; Sexual abuse; Illness behaviour; Comorbidity

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INTRODUCTION

Many different functional syndromes have been described in medicine. It seems that each medical discipline has at least its own functional syndrome^[1]. For example, in pediatrics, the painful gastrointestinal symptom without morphological alterations is called recurrent abdominal pain^[2]. For a gastroenterologist, abdominal pain with altered bowel habit is irritable bowel syndrome; for a gynaecologist, the same symptom cluster is labelled "chronic pelvic pain." The question is still unanswered whether all or some of the different functional syndromes are a single clinical entity or whether differentiation into separate syndromes does make sense and is necessarily clinically^[1]. Patients with the "irritable bowel syndrome"(IBS) as seen in gastroenterology are difficult to distinguish from "chronic pelvic pain" (CPP) as seen in gynaecological practice. It is currently unknown why some (female) patients with bowel symptoms will consult a family physician or an internist, while others will visit their gynaecologist. This raises the question whether IBS and CPP are two separate disease entities with mutual high comorbidity^[3-8] or whether they are the same syndrome with different subgroups which utilize the health care system in specific ways? While each assumption implies that the symptoms of the patients determine the final diagnosis and the clinical management, an alternative interpretation may be that clinical management depends mainly on the doctors' subspecialty (training, referral, and reimbursement practice *etc.*). The variety of syndromes may thus be artificial and the result of medical specialization. In this paper we will review the published literature based on the hypothesis that IBS and CPP represent the same disorder rather than different entities. It will cover case definition, epidemiology, and psychosocial aspects of the disease such as personality, stress, illness behaviour, and comorbidity.

CASE DEFINITION

The clinical impression that patients with IBS and CPP are significantly disabled due to their symptoms is typical for both syndromes. Both syndromes are defined on the basis of clinical signs rather than manifest diagnostic findings. This consequently results in broad overlaps between both.

IBS is defined by the following (Rome) criteria^[9]: Abdominal pain, often associated with defecation

(defecation relieves the pain), and at least two of the following: altered frequency, consistency, and/or passage of stools, and/or associated feelings of abdominal distension or bloating. The symptoms have to be present for a minimum of three months, and evidence for an organic underlying cause must be excluded to establish diagnosis.

The following criteria are frequently used to define CPP^[10,11]: Patients have CPP when pelvic pain lasts at least six months, symptoms do not correlate with sexual interference, there is no sign of malignancy, inflammatory bowel disease or pregnancy, and the occurrence of symptoms is not limited to menstruation.

A comparison of both definitions demonstrates that there are many similarities and overlaps, and they do not mutually exclude each other. The categorisation of a bundle of symptoms into a common class often results from overlapping definitions. Again, this calls for an answer to whether these two syndromes should be distinguished or whether they should be better regarded as a single disease.

EPIDEMIOLOGY

IBS

Functional bowel disorders of the IBS type are very common in the general population, but in earlier epidemiologic studies the estimate of their prevalence is questionable due to patient selection. Only in recent years large-scale questionnaire studies from the US and England allowed a more precise judgement of the prevalence in the general population as well as in specific patient groups^[12,13] despite the fact that the entry criteria for such studies have not been standardized until recently: The so-called "Manning criteria"^[14] were subsequently redefined as "Rome criteria"^[15]. It was shown recently by North *et al*^[16], Talley *et al*^[17] (2000) and others^[18] that varying the wording of criteria even an agreed clinical definition will result in prevalence rates in the same population ranging between 10% and 40%.

Nevertheless, according to new data, the prevalence of functional bowel disorders in the general population can be estimated to be in the range of 14% to 21%^[4,12,19-23], with women having between a 2.1 to 3.2 times higher prevalence than men^[24]. A large survey by Jones & Lydeard^[12] reported the male/female ratio to be 1:1.38 with an overall prevalence of 20%. These data are somewhat at variance with data from Heaton *et al*^[25] according to which 13% of women but only 5% of men in a British community were diagnosed IBS. This implies that significant cultural differences influence prevalence rates. Some surveys found that even at higher ages IBS is quite common: IBS symptoms were found in up to 20% of the people above 80 years^[26]. Others state, that IBS is mainly found in a population of the young and middle aged with 12% prevalence in a population of persons older than 60^[27].

A study from Asia suggests that there may be a prevalence difference between European and Asiatic

nations. A randomized survey in Singapore recently showed a prevalence rate for IBS of only 2.3%^[28]. The estimated prevalence in industrialized countries in the general population is 10%-15%^[29]. For single countries the prevalence is estimated to be 4.7% in France with a predominance in women^[30], 8.4% in Norway also with a female predominance^[31] and 6.6% in Japan without a significant gender difference^[32] in contrast to Mexico where prevalence in constipation predominant IBS is 19% in women *vs* 4.6% in men^[33].

It is important to note that only a minority of people suffering from functional bowel symptoms will consult a doctor for their symptoms^[26,34,35]. A survey in private practice showed a consultation rate of only 1%^[36] which is comparable to German data^[37]. Another (Spanish) study lined out that only 1/4th (27%) of patients diagnosed with IBS sought medical help^[19].

Talley *et al*^[13] were able to show that an IBS population is not stable: Of 582 subjects without symptoms at a first survey, 9% would report symptoms 2 years later, while 38% of initially IBS labelled patients were not fulfilling the diagnostic criteria any longer at follow-up. A Scandinavian study reported similar results^[38].

CPP

Despite the fact that CPP is quite common among women, Zondervan *et al*^[11] found CPP to be the most common diagnosis within primary care units in Britain. However, reliable epidemiologic data are rare. Earlier studies included only patients utilizing health care institutions. They imply that up to 25% of patients in gynaecological practice suffer from CPP^[39,40]. Five to 10% of all laparoscopies and 20% of all hysterectomies are performed because of chronic lower abdominal complaints^[41].

Mathias *et al*^[42] surveyed a representative sample of 5263 US American women for 3 mo and found an overall prevalence of 14.7%. This reported prevalence of CPP is nearly identical to the percentage of IBS women patients (14.5%) in the US householder survey by Drossman *et al*^[22], which was similar in size and approach.

Coincidence of CPP and IBS

It is evident from the above cited literature that there must be at least a significant overlap between CPP and IBS: Longstreth^[43] noted that almost half of the patients who had undergone laparoscopy because of CPP and 40% of patients who had had an elective hysterectomy had symptoms compatible with the diagnosis IBS. Another study shows that 35% of CPP patients also suffer from IBS^[44]. Most gynaecologists were unaware of the bowel symptoms so that they could not establish this diagnosis. Walker *et al*^[45] found 35% of IBS patients to demonstrate CPP complaints as well; this group, however, showed a significant higher rate of affective disorder, anxiety, somatization disorder, sexual abuse in early childhood, and a history of hysterectomy than patients with IBS symptoms alone.

PSYCHOSOCIAL ASPECTS IN IBS AND CPP

Patients with CPP and IBS have been reported to show similarities with respect to psychosocial aspects of their disease; these are discussed with regard to (a) personality profiles and psychometric characteristics, (b) recent or acute stressful life events in association with illness onset or course, more specifically (c) a history of sexual or physical abuse, and (d) illness behaviour and health care utilization as well as (e) comorbidity.

Personality and emotions

Standardized psychiatric interviews were used to study whether IBS patients would show an increased incidence of emotional disturbance. A psychiatric comorbidity approaching 20% to 60% was described by Folks^[46]. Creed *et al*^[47] found in a population of patients with severe IBS with a percentage of 42% depression, panic and generalized anxiety disorder. Hislop^[48] found depression in 73% and anxiety in 69% of his IBS patients in contrast to 18% and 22%, respectively, in a control group. Tricas *et al*^[49] used DSM-IV criteria and showed that there were more depressive disorders within the IBS group compared to organic ill patients, and that there was a longer duration of gastrointestinal symptoms and a higher level of general anxiety and hypochondriasis which predicted the diagnosis of IBS. According to studies using diagnostic criteria, in up to 72% of IBS patients^[50] a psychiatric diagnosis could be assigned, mainly hysteria, anxiety and depression. A higher level of anxiety in IBS patients was also reported by Huerta *et al*^[51]. Young *et al*^[52] classified 72% of 29 IBS patients as psychiatrically disturbed as compared to 18% of a control group. Latimer *et al*^[53] found all of his 16 IBS patients to fit into psychiatric diagnostic groups as compared to 47% of healthy controls. Thompson *et al*^[54] recognized that IBS patients suffer from elevated fear of cancer in contrast to organic ill patients.

Besides interviews, standardized psychometric tests have also been used to answer this question: Wise *et al*^[55] reported increases on all clinical subscales except paranoia and phobia of the Hopkins Symptom Check List (SCL-90-R). Other authors using the same test^[56-59] found IBS patients to score higher for somatization, depression, anxiety, and hostility. Depression was also shown to be elevated in 50 of 100 patients with gastrointestinal complaints of different origin using the Beck Depression Inventory; in 64% of depressive patients no organic intestinal disease could be found^[60], but depression scores of IBS patients were lower than in psychiatric patients with a main diagnosis of depression^[61]. Various attempts were made to identify a specific IBS personality profile. Bergeron & Monto^[62] (1985) described 4 subtypes of personality patterns in IBS patients: inadequate dependency (28%), somatization of emotions (16%), reactive depression (16%) as well as anger and denial (8%). Ali *et al*^[63] discovered that a characteristic feature for IBS patients is a higher score of self-blame and self silencing and depression compared to patients with inflammatory bowel disease.

Talley *et al*^[64] found IBS patients to be similar to patients with functional dyspepsia or organic gastrointestinal diseases with respect to MMPI test scores for hypochondriasis, depression, conversion neurosis, ego strength, and schizophrenia, but all patient groups had elevated scores as compared to healthy control subjects. Richter *et al*^[65] showed IBS patients to be similar to patients with nutcracker oesophagus with respect to most MMPI scales, but with higher depression and anxiety scores. When the Eysenck Personality Inventory (EPI) was used, IBS patients showed higher than normal neuroticism scores^[60,66-68].

Patients with CPP were also found to demonstrate increased levels of depression, anxiety disorders, borderline disturbances, and a tendency for somatization^[69,70]. They also showed disturbances in sexuality and relationship to their partner^[71,72], and reported more pregnancy related complications^[70,73]. A decreased sexual drive and a higher rate of sexual dysfunction in men and women suffering from IBS symptoms compared with a control (non ulcer dyspepsia) was described by Fass *et al*^[74].

Lorenzatto *et al*^[75] separated patients with endometriosis in two groups: one suffering from chronic pelvic pain, the other pain-free. Using the Beck Depression Inventory they found depression in a percentage of 38% with and without chronic pelvic pain, respectively. Complaints of depression, such as somatic concerns, work inhibitions; dissatisfaction and sadness were observed at a significantly higher rate in the group with pain. Pevler *et al*^[76] compared patients with endometriosis to those with CPP without such potential explanation for their symptoms and found no differences in affective symptoms and personality characteristics, but patients with endometriosis reported significant higher pain scores and were more affected by symptoms in their daily social life. Hodgkis & Watson^[77] also found no differences in personality profiles and illness behaviour between patients with lower abdominal pain with and without endometriosis. One has to keep in mind, however, that only a fraction of patients with endometriosis will experience pain^[78], which implies that the presence of an endometriosis alone is not sufficient to explain the symptoms. Ehlerst *et al*^[79] found a high comorbidity rate of CPP with other somatoform pain disorders.

In summary these data demonstrate that overall IBS patients show more psychologic or psychiatric disturbances than normal population. For patients with CPP, this question has not yet sufficiently been addressed. Most of these studies have, however, been performed by health care utilizers within medical institutions; since only a minority of people suffering from IBS and CPP symptoms will consult a doctor, this raises the question as to whether the psychological disturbances do determine the health care utilization and illness behaviour rather than the abdominal symptoms.

Stressful life events and symptoms

A significant correlation between stressful life events and

symptom deterioration was noted in 50 to 85% of IBS patients very early^[80,81]. Chaudhary & Truelove^[82] found the most frequently increased life events of IBS patients to be concerns regarding profession (in men) and family (in women). Secondulfo *et al*^[83] reported that more than 50% of IBS patients describe a stressful job and family disease. Hill & Blendis^[66] reported that specifically professional concerns bothered IBS patients, but altogether 33% also reported death of a parent as the event preceding the symptom onset. Early childhood social deprivation seems to play a major etiological role since 31% of 333 IBS patients had lost parents before age 15 through death, divorce, or separation^[84]. Unfortunately, these studies all lack appropriate control groups.

Mendeloff *et al*^[85] compared self-reported life-events in 102 IBS patients, 227 patients with chronic inflammatory bowel diseases and in 735 healthy adults. A life-event scale demonstrated that IBS patients were more exposed to life stressors than the control groups. Pace *et al*^[86] found that the severity of recent stressful life events was perceived to be higher by IBS patients than by patients with an inflammatory bowel disease. Fava & Pavan^[87] repeated this study using another scale: their 20 IBS patients also reported more such events than 20 patients with ulcerative colitis and 20 patients with appendicitis.

Drossman *et al*^[88] found that normal subjects without IBS symptoms attribute changes in stool frequency to life stressors: 45% reported abdominal pain in response to stressful social or personal events. Abdominal responses to stressful events are, therefore, not specific for IBS patients, and no direct association between experienced daily-life stress and symptom severity could be observed when this was evaluated prospectively^[57]. Another study shows that functional GI disorders were more likely to be reported by those patients with more negative and total life event stress^[89]. However, IBS patients reported overall more life events in the three months preceding the investigation, and were more susceptible to stressors than the control counterparts^[90]. In agreement with a study by Ford *et al*^[91], life events alone seem not to be specific for functional bowel disorders, but tend to elicit feelings of anxiety and helplessness. Stress coping strategies may therefore be of relevance for distinguishing IBS patients from controls.

At onset of CPP symptoms, stressful life events have also been reported to be increased, but here specifically the onset of sexual relationships, marriage or closer personal bondage, and the first pregnancy have been named^[92] besides more general psychosocial factors^[93]. More elucidating data are, however, missing.

In summary, both patients with CPP as well as with IBS reported increased incidences of stressful life events at disease onset. Interpersonal relationship and sexual conflicts occur predominantly in CPP patient groups while IBS patients mainly report professional and social conflicts. It is likely that the presence and severity of these events as well as the subsequent coping determine how the patient will perceive the symptoms, whether he/she will plan to consult a doctor and if so, which doctor and which subspecialty will be the first choice.

Physical and sexual abuse

Physical and sexual abuse during childhood or as during adulthood was recently found to be present in up to 40% of patients with IBS and with organic bowel disorders. In these initial studies "sexual abuse" was defined as involuntary presentation of sexuality during childhood or sexual acts against one's own will during adulthood^[94-96]. Blanchard *et al*^[97] found a rate of 58% within a population of IBS patients who reported childhood sexual and physical abuse. When the same instrument was used in the general population, up to 40% reported such events^[96] and a significant association of symptoms of functional bowel disorders and abuse history was noted. Talley *et al*^[98] stated that, regarding to the results of a population based study, childhood abuse only but not abuse during adulthood is associated with IBS. Reilly *et al*^[99] and Ali *et al*^[63] found in two independent controlled studies that in IBS patients there was a higher rate of sexual and physical abuse compared with the organic ill control patients. Salmon *et al*^[100] brought forward the argument that childhood abuse is linked to IBS because it causes a tendency to dissociate and because dissociation causes a general increase in physical symptoms. Comparable data are reported from European countries, e.g. France^[101].

In CPP patients, a similar high incidence of sexual and violent physical abuse both during childhood and in later life phases was noted^[102-104]. Toomey *et al*^[101] recorded in 58% of patients with lower abdominal pain a history of sexual abuse as a child or as adult, Hilden *et al*^[105] also found a significantly association between CPP and a history of sexual abuse. Walker *et al*^[106] described an increased prevalence of adult CPP patients- as compared to a group of patients without pelvic pain- to have experienced childhood or adult-life sexual abuse. In these cases, increased rates of somatization and affective disorders were found as well as post-traumatic stress disorder (PTSD) symptoms. Dobie *et al*^[107] also found coherences between PTSD and CPP. Women with those symptoms were significantly more likely to endorse physical health problems like IBS and CPP. Bodden Heidrich *et al*^[108] compared patients with CPP and patients with chronic vulvar pain syndrome, and found that CPP patients had a significant higher rate of childhood abuse history as well as a higher rate of depression and somatization than the controls. According to this, Reed *et al*^[109] found that women with CPP were younger and less educated than patients with vulvodynia and were more likely to have a history of physical and sexual abuse, to report recent depression and to screen positive for current depression, to have more work absence and to have more somatic complaints. Ehlert *et al*^[79] found no difference between studied CPP patients with and without abdominal adhesions found during laparoscopy but nevertheless discovered that in both groups more than 70% fulfilled criteria of somatoform pain disorder and that both groups showed a significant higher incidence of sexual trauma history. Walling *et al*^[110,111] compared 3 patient groups (patients with CPP, patients without pain symptoms, and patients with pain symptoms others than pelvic) and found

specific relationships between sexual abuse and CPP as well as a general association between a violent abuse and chronic pain in general. In general, childhood physical abuse, stressful life events and depression seem to have a significant impact on the occurrence of chronic pain in general, whereas, according to Lampe *et al*^[112], childhood sexual abuse is correlated with CPP only. However, a few studies also contradict these findings; e.g. Rapkin *et al*^[113], who could not find differences in any abuse history in patients with CPP, patients with pain in other regions, and patients without pain symptoms.

A careful conclusion may be drawn currently that an increased rate of childhood sexual and/or physical abuse can be found in both patient groups. It remains to be established what the exact pathomechanism for development of pain following such trauma is; it is currently speculative whether it represents some kind of somatic pain memory, similar-or different-to patients with visceral hyperalgesia due to previous inflammation (post-inflammatory IBS)^[114].

Illness behaviour and health care utilization

Sandler *et al*^[115] investigated subjects with abdominal dysfunction which had not consulted a doctor for their symptoms. They found that the intensity of/grade of interest in such symptoms is the major factor leading IBS patients to search for medical help. Greenbaum *et al*^[116] were the first to show that subjects with symptoms suggestive of IBS who had not consulted a doctor for these symptoms, were significantly less psychologically disturbed than their clinical counterparts. They had, however, still more psychopathological traits than patients without any symptoms. Whitehead *et al*^[57] and Drossman *et al*^[88] in the US and Heaton *et al*^[25] in England noted further that psychosocial factors as those discussed above are associated with the patient status rather than with the disease per se. The main difference between consulters and non-consulters is symptom severity, more experience with stressful life events^[117], and self-reported psychological stress^[57]. Others showed that there are no significant differences between consulters and nonconsulters with IBS in the dimension of abnormal illness behavior^[118]. While some authors noted significant differences between first-time consulters and chronic health care users^[119], others could not find group differences^[120]. Latimer *et al*^[53] finally reported that psychoneurotic control subjects showed similar colonic myoelectrical motor pattern irrespective of pain symptoms and concluded^[121] that symptom reports, nonverbal and observable behaviours, and psychological responses can be quite independent from each other, and that clinical IBS patients represent a subgroup of patients with bowel complaints, who misperceive symptoms arising from the gut or misinterpret them and cope inadequately, e.g. by consulting a physician^[122]. Psychopathology may be independent from stool behaviours and abdominal symptoms, but does co-determine who will utilize the health care system. This is further supported by the fact that IBS patients more frequently consult alternative medicine remedies than patients with organic

gastrointestinal disorders^[123-125], they consult more frequently gynaecologists^[126], and they undergo more laparoscopic and gynaecologic operations^[127,128].

For patients with CPP the study by Mathias *et al*^[42] implies similar problems as described for IBS. Of 773 patients of a representative sample in the general population who suffered from symptoms suggestive of CPP, in 61% of cases the diagnosis was unknown since they had not consulted a doctor. In less than 10% an endometriosis had been diagnosed. Only 25% of the patients had consulted a doctor because of these symptoms during the last 3 mo. Most of the patients (86%) used non-prescribed pain relievers, while 23% had prescription for pain medication, and 12% used prescribed oral contraceptives. Cheong *et al*^[129] reported that 60% of women with CPP had not received a specific diagnosis and up to 20% have not undergone any investigation.

Comorbidity

With respect to comorbidity in IBS and CPP, it has to be kept in mind that while IBS comorbidity studies can be qualified and based on an international consensus such consensus is missing for CPP. The second argument to remember is that, in contrast to other syndromes that are usually based on a pathological model of the disease and well-defined clinical findings, IBS and CPP symptoms are based on patients' subjective report of pain in the lower abdomen in the absence of organic explanations for it.

Recent studies in BS^[3,4,8,45] have found a high rate of comorbidity of IBS with other pain syndromes: Sperber *et al*^[7] found a high comorbidity of IBS and fibromyalgia, with 31.6 % IBS patients having this additional diagnosis. Inversely, fibromyalgia patients could be diagnosed as suffering from IBS in 32 % of cases. Another study designed by Aaron *et al*^[6] investigated IBS symptom overlap with chronic fatigue syndrome, fibromyalgia, and temporomandibular disorders, and found that all groups a significant higher lifetime prevalence rate for IBS (92%, 77%, and 64%, respectively) than in the control group. In addition they found symptoms that occurred commonly in all three groups, such as generalized pain, sleep and concentration problems, bowel complaints, and headache. Whitehead *et al*^[130] reported that fibromyalgia, chronic fatigue syndrome, temporomandibular joint disorder and chronic pelvic pain are the best documented nongastrointestinal nonpsychiatric disorders concerning IBS patients. According to the study of Cole *et al*^[131], patients with IBS had a 40% to 80% higher prevalence of migraine, fibromyalgia and depression. Endicott *et al*^[3] compared three subgroups of psychiatric patients and found that those who suffer from chronic fatigue symptoms had a significant higher lifetime prevalence of IBS, infectious mononucleose like syndromes, and herpes as well as allergic diseases.

In a study in a general population Kennedy *et al*^[23] recognized an independent association between IBS and chronic bronchitis, and they described a higher coexistence

of IBS, gastroesophageal reflux, and bronchial hyper-responsibility than was statistically to expect. This was underlined by Caballero *et al*¹⁹¹ who described that in a community based study 55.4% of IBS patients reported additional symptoms of dyspepsia, and by Hyams *et al*⁸¹ who found that among his dyspepsia patients 24% had IBS. Talley *et al*¹³² found, that in a survey of Sydney residents, at least 60 % of the general population reported four or more gastrointestinal symptoms, among which 11.8% fulfilled Rome criteria for definition of IBS.

For CPP, less research results have been reported with respect to comorbidity. However, the controversy is well documented in the literature on the role of adhesions and endometriosis in CPP^{133,134}; many patients who have endometriosis or adhesions suffer from CPP and/or IBS, but somatic findings alone fail to predict the occurrence of symptoms and to explain the discrepancy between pathomorphologic findings and pain intensity. One example is the association between abdominal symptoms and dyspareunia¹³⁵. Another accepted association-according to the actual literature-seems to be the association of CPP with somatoform pain disorders¹³⁶.

CONCLUSION

It is evident from the above referenced literature that IBS and CPP are most likely the same rather than different clinical entities, since similarities outnumber differences by far. Pain in the lower pelvis or abdomen is a central criterium for both syndromes. Prevalence data in general population are very similar for IBS and CPP. Patients of both groups often suffer from additional mental disorders, respond with symptoms to every-day stress, and show a increased rate of sexual and/or physical abuse in the past: In both syndromes, only a minority asks for medical care, and there is evidence for a high comorbidity rate of somatoform disorders in patients with IBS, and this seems to be similar in CPP. All these findings underline the hypothesis that primarily the patients' history, symptoms, and healthcare consulting behavior may be responsible for the differentiation into the syndromes IBS and CPP.

However, an alternative approach would be to attribute syndrome differentiation to the medical decision process. It is well established in literature that a medical diagnosis is the result of a complex psychological decision algorithm^{136,137}. To conclude that symptoms do always fit to a specific diagnosis would over-simplify this process. Patients and doctors select some of the symptoms at the entry of their communication. The presentation and selection by the patients, followed by the recognition and interpretation by the doctor, are essential steps towards a diagnosis¹³⁸. This implies that the physician perceives and interprets the symptoms presented in agreement with his model of the disease, and this model conducts his awareness, recognition, and rules for interpretation. These rules, however, differ widely between medical specialties such as obstetrics and gastroenterology. One consequence

from this dilemma is that e.g. doctors in private practice recognise less than half of patients with depression¹³⁹⁻¹⁴¹, and know in only about 1/5 of cases that patients had experienced trauma prior to disease.

Therefore, it seems reasonable to conclude that the highly specialized doctor contributes as much to the diagnostic entity than does patients symptom history and health care behavior. If this holds true, the question why some patients with lower abdominal pain go to their gynaecologist while others consult a family physician or internist cannot be attributed to patient characteristics alone. This and the fact that the diagnosis CPP does not exist in some countries indicates that the role of the health care system itself in distributing patients to subspecialties and attributing final-and different-diagnoses to patients with similar symptoms has to be re-evaluated. Very little data exist on the contributing role of medical training, referral and reimbursement policy, health plans, and other factors on medical decision making, especially in such large populations as in patients with IBS and CPP.

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