Hypochondriasis: common presentations and treatment strategies in primary care and specialty settings

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Hypochondriasis is a somatoform disorder marked by recurrent preoccupation with fears of having a life-threatening disease despite appropriate work-up and medical reassurance. The etiological explanations for hypochondriasis have evolved over time from a psychoanalytic stance (as an unconscious manifestation of instinctual drives) to social learning, cognitive–behavioral, and biological models that focus on functional values of hypochondriasis and parallels to anxiety disorders. We review recent therapeutic developments while emphasizing the importance of the therapeutic alliance. Although reassurance, psychotherapy, psychopharmacology and mental health referral are clearly indicated, we caution against using them prematurely. Since primary care and nonpsychiatric specialty physicians care for the majority of patients with hypochondriasis, we review the clinical presentations and treatment nuances specific to several different settings.

Hypochondriasis is a vexing somatoform disorder associated with marked economic and social costs [1,2]. Defined as an illness that does not respond to appropriate medical evaluation and reassurance, hypochondriasis is difficult, frustrating and seemingly impossible for most physicians to manage, partly because of its deviation from the traditional medical model. Patients vigorously seek treatment but paradoxically dismiss efforts made by physicians. This may represent a stance of 'hostile dependency'. The physician is often left with a mixed feeling of anger and futility. Even more discouraging is the reluctance of patients to seek mental health care when recommended. Nevertheless, despite these challenges, many physicians can provide effective treatments for patients with hypochondriasis.

We believe that empathic understanding and dedicated attention to the therapeutic relationship are foundations to treatment. We briefly review the evolution of etiological models that explain the origin of hypochondriasis and provide updated pharmacological and psychotherapeutic treatment modalities. Since both primary care and specialty physicians face specific challenges with hypochondriasis patients, we specifically focus on the presentation of hypochondriasis in the various practice settings.

Keywords: anxiety disorder, hypochondriasis, psychopharmacology, psychotherapy, somatoform disorder

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Diagnosis

The Diagnostic and Statistical Manual, 4th Edition, Text Revision diagnostic criteria for hypochondriasis requires that the patient is preoccupied with fears of having a serious illness based on misinterpretations of bodily symptoms and that the preoccupation persists despite medical evaluation and reassurance [3]. There is some overlap of the criteria with other somatoform disorders and the patient may respond somewhat to reassurance [4]. Recent empirically derived criteria for hypochondriasis call for the use of 'obsessive rumination' of illness to be a major criterion [5]; however, the revised criteria await validation. We outline a pragmatic and dimensional conceptualization of the hypochondriacal spectrum from normal health anxiety to hypochondriacal psychosis in **Figure 1**. The two clinically important dimensions are the degree of impairment in reality testing and the severity of symptoms. It is important to have this framework in mind while attempting to diagnose and, more importantly, to understand and thereby provided specifically tailored treatment for each patient. Somatoform disorders (e.g. body dysphormic disorder and somatization disorder) also fit in this continuum. Other psychiatric conditions, such as depressive disorders, generalized anxiety disorder (GAD), obsessive–compulsive disorder (OCD), panic disorder (PD) and personality disorders, must also be included in the differential diagnosis and when considering psychiatric comorbidities. Prior to making a firm diagnosis of hypochondriasis, subtle presentations of occult systemic disorders must be carefully ruled out.

Specific diagnostic instruments for hypochondriasis include the Whitely Index of Hypochondriasis (WIH) [6] and Illness Attitude Scales (IAS) [7]. The sensitivity and specificity of the WIH and Health Anxiety subscale of the IAS

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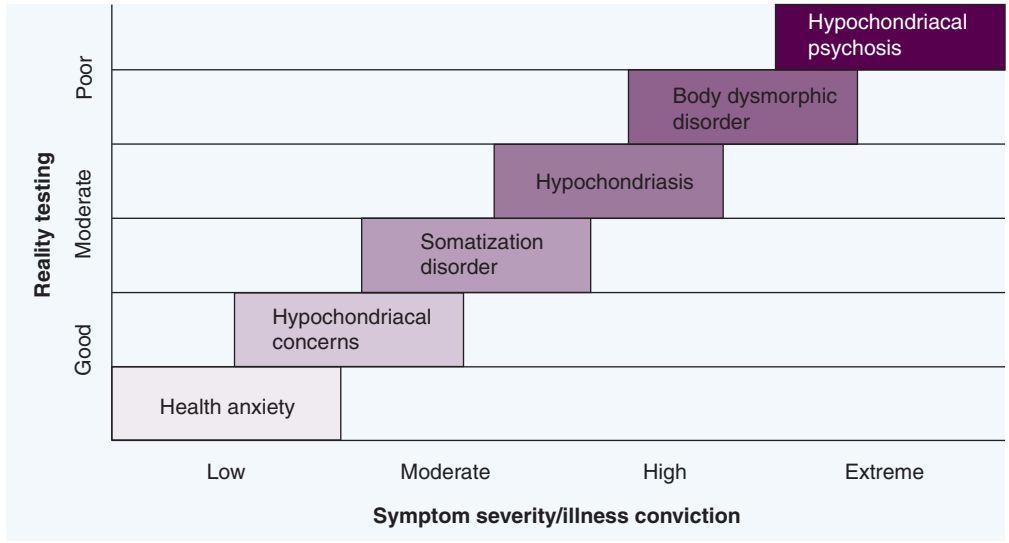
Figure 1. Conceptualization and differential diagnosis of hypochondriasis.



Health anxiety refers to concern or preoccupation regarding health that is appropriate, reality-based and responds to medical evaluation and reassurance.

were 87 and 72%, and 79 and 84%, respectively. A high score on the WIH was associated with a poor recovery rate at 1 year. The Illness Behavior subscale of the IAS was predictive of the number of primary care visits [7]. Both instruments could be used for screening and their subscales were sensitive to treatment changes. Other screening, general diagnostic and symptoms severity tools include the Health Anxiety Inventory [8] and Somatoform Disorder Symptom Checklist [9]. It is important to note that these assessment instruments have been mainly used in research settings and may lack patient specificity for individual treatment planning. The Minnesota Multiphasic Personality Inventory (MMPI) hypochondriasis scale is commonly used to study general hypochondriacal concerns but is less specific for hypochondriasis as a disorder.

Etiology: explanatory models

Psychodynamic model

The development of physical symptoms from unconscious conflicts may be traced to Sigmund Freud. Psychodynamic defenses, such as repression and displacement, were regarded as the basis for hypochondriasis. According to this model, in order to remediate unconscious conflicts, such as aggression and hostility towards others, physical complaints serve to reconcile such internally unacceptable drives. The hypochondriacal symptoms may serve to 'undo' guilt felt regarding anger and serve as a punishment of the self [10]. While this is a popular and plausible model among psychoanalysts, it is often difficult to engage hypochondriacal patients in such introspection.

Social learning model

According to this model, hypochondriasis is a social transactional process whereby a patient assumes the 'sick role' to obtain a 'socially acceptable excuse' or relief from social or occupational obligations. When a person becomes ill through no fault of his/her own, a different set of social rules apply [11]. Having an illness ensures that the individual will be taken care of [12]. Anxious attachment styles have been found to be associated with hypochondriacal symptom reporting [13,14]. This highlights the inherent paradoxical pinnacle of hypochondriasis. On the one hand, the patient wants insurmountable help from the physician (perhaps as a parental figure). On the other hand, professional recommendations are eventually rejected. Therefore, treatment of hypochondriasis mandates a well-balanced therapeutic relationship that calls for implicit social duties of the physician, both as a caring parental figure and an objective professional caretaker.

Cognitive–behavioral model

According to this model, patients misinterpret bodily symptoms and amplify their somatic sensations into fears of having a real, life-threatening malady [15]. They have lower than usual tolerance for physical discomfort and lower than

usual threshold for seeking medical care [16]. The automatic belief that good health is the complete absence of physical symptoms may serve to contribute to bodily preoccupations, resistance to reassurance and excessive use of medical services [17]. Such cognitive distortions and consequent reassurance-seeking behavior may serve to maintain the disorder [18]. Therefore, targeted therapy focuses on the patient's realistic appraisal of health.

Anxiety spectrum disorder

Hypochondriasis may be conceptualized as a variant manifestation of an underlying anxiety disorder (AD). According to this model, the anxiety originates from the preoccupation with fear of having a disease, which occurs despite reassurance. Other disorders on the spectrum that share similar etiology but slightly different phenotypes include OCD, PD, specific phobia and GAD. In fact, a neuroanatomical study demonstrated that hypochondriasis, OCD and PD may have similar frontal–striatal and limbic activity in the brain, which was associated with increased distractibility for irrelevant information [19]. This model has immediate treatment implications as most ADs respond well to pharmacotherapy (for the dysfunctional neurotransmission) and cognitive–behavior psychotherapeutic interventions.

Neuroscience underpinnings

Studies have shifted in a neuroscience direction for hypochondriasis and other somatoform disorders (e.g., conversion disorder). Attention and expectancy influence symptom reporting and earlier attention/expectancy effects on symptom reporting, producing physical symptoms in the absence of any deliberate physical stimulation. It was demonstrated that groups triggered in terms of attention, expectancy and attention plus expectancy had much higher symptom reporting [20]. Biological processes may underlie behavior in pseudoseizure (an example of conversion disorder) patients. Nonconsciously mediated processes dominate normal cognition and similar processes produce 'involuntary' conversion symptoms without the patient knowing where the 'intention' is from [21].

Therapy

General approach

Table 1 outlines the general principles for the treatment of hypochondriasis [201]. Successful treatment begins with a firm understanding of hypochondriasis and respect for the patient who is in fact suffering from significant distress. A trusting, long-term patient–physician relationship is the foundation to treatment. In developing this therapeutic alliance, premature reassurance and abrupt, unplanned confrontation should be avoided. Reassurance and gentle confrontation will contradict the bodily experience of the patient and should only be invoked after developing an enduring, trusting therapeutic relationship. Several follow-up appointments may be required to strengthen this relationship, as well as for confirming the diagnosis of hypochondriasis. When hypochondriasis is suspected, a repeat detailed history and physical examination should be attempted; and laboratory testing and invasive procedures should be ordered only when clearly indicated. The threshold for the use of common screening laboratory studies should be applied to patients with hypochondriasis as is typically applied to most patients. Since the patient with hypochondriasis is as likely as other patients to develop a new medical condition and have a medical disorder with atypical presentations, the patient's physical symptoms should not be attributed solely to psychogenic causes. We recommend standard-of-care level of medical evaluation for each additionally new or evolving physical symptom, with additional consideration to psychological factors. Benefits and risks of each additional new work-up must be carefully balanced and individualized. While indiscriminate use of reassurance and investigations could potentially reinforce hypochondriacal behaviors, it is also important to note that low-risk routine studies should not be withheld. There is no known evidence that routine studies necessarily worsen the prognosis of patients with hypochondriasis. When inappropriate studies and referrals are inappropriately withheld, there is every reason to believe that this will impair the therapeutic relationship. Furthermore, especially in the first few visits, use of words associated with high social stigma (including diagnostic terms such as hypochondriasis) could damage the therapeutic relationship [22,23].

During the maintenance stage of treatment (**Table 1**), the established therapeutic alliance and the durability of this relationship is tested. Key elements during the management process include setting limits with respect to number and frequency of visits, further testing or referrals and amount of time during each visit [24]. Treatment goals should be placed on symptom coping and management rather than finding a specific disease and curing it. Gentle confrontation could be

Table 1. Outline of therapy recommendations.

Treatment stage/modality	Goals and details
Establishment of therapeutic alliance	Acknowledge patient's pain and suffering Understand symptoms as a form of emotional communication Search for comorbid medical and psychiatric illness Be aware of emotional reactions and/or judgmental stance towards patient Judiciously employ diagnostic evaluation and referrals
Maintenance of therapeutic relationship	Reassure the patient that evaluation will be ongoing Focus on care and not cure of patient Emphasize that treatment requires regular scheduled visits Explain to the patient that he or she is not 'crazy' Introduce the possibility that psychological factors (stress) may play a role in amplification of underlying physical symptoms Educate the patient regarding etiology and treatment if they are ready to listen Stay current with routine healthcare maintenance
Psychotherapy	Cognitive–behavioral therapy Behavioral stress management Problem-solving therapy Exposure plus response prevention Psychoeducational group therapy Explanatory therapy
Pharmacotherapy	Target psychiatric comorbidities first Consider the following medications: – Antidepressants: selective serotonin-reuptake inhibitors, serotonin–norepinephrine-reuptake inhibitors, tricyclic antidepressants and others (e.g., mirtazepine and trazodone) – Antipsychotics: second-generation antipsychotics (e.g., risperidone, olanzapine and quetiapine) or pimozide

Modified from [201].

introduced during this stage. The physician may reassure the patient that he/she is not crazy and that he/she will not be abandoned. The role of contributory psychological factors, including childhood developmental issues, could be raised. The possibility of having a comorbid psychiatric condition could then be explored. The use of educational and explanatory models regarding the etiology and treatment of hypochondriasis should only occur when the patient is ready to listen. Timing is critical. During the maintenance stage, appropriate attention should be spent on addressing healthcare maintenance issues (e.g. routine cancer screening based on age and risk factors), healthy diet and exercise regiments, tobacco cessation and other treatment issues as indicated. More attention on such 'routine' and primary health prevention strategies may serve to soothe hypochondriacal concerns and convey genuine compassion for the patient.

Psychotherapy

While the literature describes numerous systematic psychotherapeutic treatment approaches for hypochondriasis, including hypnosis and psychoanalytic psychotherapy, more rigorous studies have demonstrated consistent results with cognitive–behavioral therapy (CBT) [25,26]. In a large, randomized, controlled study involving 80 primary care patients and 101 advertisement-recruited volunteers [27], CBT-treated patients, compared with patients who received usual care, had significantly lower levels of hypochondriacal symptoms, beliefs and attitudes, health-related anxiety, impairment of social role functioning and intermediate activities of daily living. However, hypochondriacal symptoms, *per se*, were not significantly improved by CBT treatment. A few treatment modalities have been shown to be comparable to CBT (**Table 1**). These include behavioral stress management [28], problem-solving therapy [29] and exposure plus response prevention [30]. Others therapies include psychoeducational group therapy [31] and explanatory therapy [32]. It is important to note that no specific psychotherapeutic modality has been shown to be definitive, although available evidence favors CBT [25]. As in most psychotherapeutic interventions, treatment adherence will likely affect treatment success.

Despite easier adaptability of the manualized treatment methods, such as CBT, availability remains a challenge. In the case of hypochondriacal concerns that are mild, referral to available psychoeducational programs (when available) may be considered [25].

Pharmacotherapy

Antidepressants have been reported to be effective for the treatment of hypochondriasis in case reports and small, open-label, clinical series with clomipramine, fluvoxamine, nefazodone, fluoxetine and paroxetine, generally with sample sizes fewer than 30 [33]. For example, in a 12-week double-blind, placebo-controlled trial of fluoxetine in 20 patients, eight out of 12 responded to fluoxetine while four out of eight responded to placebo [33]. More recently, paroxetine was found to be comparable to CBT in a randomized, placebo-controlled study with 112 patients, based on completer analysis (CBT 54%, paroxetine 38% and placebo 12%, respectively). In the intention-to-treat analysis, however, CBT, but not paroxetine, showed significantly higher response than placebo (CBT 45%, paroxetine 30% and placebo 14%) [34]. For delusional parasitosis, two small double-blind, placebo-controlled studies showed pimozide to be superior to placebo [35,36]. Electroconvulsive therapy has also been described as an effective somatic treatment [37].

In general, we recommend full collaboration with the patient in selecting the most suitable pharmacological agent for treatment as many patients may find accepting a psychotropic medication just as difficult as accepting the diagnosis. In a small, limited survey of 23 volunteers with hypochondriasis, 4% of the sample preferred medication treatment over psychotherapy, 22% preferred either and 74% preferred psychotherapy to medication. In most cases, pharmacotherapy could be started for the treatment of psychiatric comorbidities. Based on lower side-effect profile and better tolerance, we recommend that a selective serotonin-reuptake inhibitor (SSRI) or serotonin–norepinephrine-reuptake inhibitor antidepressant be tried first. Compared with antidepressant treatment of depressive disorders, response may also require longer duration (8–16 weeks) and higher dosages, as in ADs. Antipsychotic therapy should be considered for impaired-reality testing [38]. We recommend a detailed discussion regarding the chosen medication. Patients will often not fill the prescription, take half the prescribed dose or not return for appointments when medications are started prematurely.

Psychiatric referral

Hypochondriasis is highly comorbid with depressive and/or ADs. In a general medical population, 88% of patients with hypochondriasis had one or more concurrent Axis I psychiatric disorder: GAD (71%), dysthymic disorder (45.2%), major depression (42.9%), somatization disorder (21.4%) and PD (16.7%) [39]. Patients were also three-times more likely to have a personality disorder. Patients are less likely to see a mental health provider for hypochondriasis than for the comorbid psychiatric disorder. However, studies have shown that long-term prognosis could be quite good for those who do attend a brief, flexible, therapeutic program specifically for hypochondriasis [40]. For patients who resist mental health referrals, it might be more effective to focus on the psychiatric comorbidities first, if the patient is more likely to accept the comorbid psychiatric diagnosis. Since patient acceptance is crucial, the strength of the therapeutic alliance is likely to predict the likelihood of treatment success. In other cases, the physician may work with a mental health professional for consultation and/or collaborative care. In either scenario, direct communication between the primary physician and mental health consultant will be critical to avoid splitting and to coordinate care, including medication prescriptions. As with premature reassurance, premature referral to a mental health provider may generate resistance and impair the therapeutic alliance. To avoid this, the physician may often have to be aware of his/her own cognitive distortions, for example, "This is a psychiatric patient … I cannot help this patient."

Hypochondriais in primary care & specialty settings

Primary care

Studies using structured interviews have estimated the prevalence of hypochondriasis to be between 0.8 and 6% in primary care settings [5,41,42], depending on the population surveyed. A patient will typically present with one or more physical complaints that may be nonspecific. The history and physical examination may not support a clear systemic cause; however, the distress the patient suffers is clearly present. Despite attempts to explore physical or psychosocial precipitants, it is often difficult to identify the exact precipitant of the current presentation. The vagueness of the physical symptoms, along with the emotional overtone of an emergent crisis, makes this exploration even more chaotic. The patient is convinced that there might be a life-threatening

illness yet to be discovered. Further history often reveals that several other physicians have evaluated the patient extensively, also without any objective evidence of systemic disease. A history of 'doctor shopping' is common. Frustration may ensue, as the patient feels the physician does not care about his/her suffering. The underlying resentment may be rooted in a feeling of abandonment, although the patient generally has no insight into his/her own role in creating havoc in previous physician–patient relationships. The tasks of the primary care physician here involve the development of a caring and professional relationship with the patient and setting realistic expectations, keeping in mind past failures the patient and other physicians have experienced. This is an art that relies on limit setting. If this boundary is too rigid, though, the patient may again flee to some other provider.

After overcoming the challenges of establishing an ongoing working relationship with the patient, the primary care physician is faced with unique tasks. Often, the patient has already researched on possible diseases and comes in requesting a blood test, a radiological study, and/or an invasive procedure. The patient may additionally question the expertise of the primary care physician and request referrals to see different specialists. While many occult systemic conditions are enigmatic and require detailed work-up, the exercise of discipline is crucial, with special caution against excessive work-up. Disorders such as multiple sclerosis (MS), myasthenia gravis, systemic lupus erythematosus and occult malignancies should be considered. However, the diagnostic work-up needs to be used judiciously rather than as a response to a patient's projected anxiety. Any possible yield of an investigation must be balanced by the potential medical risks as well as the psychological risk of reinforcing the cyclical hypochondriacal pattern. The patient should be engaged to take part in the decision-making process when possible. Premature reflexive reassurance may be interpreted as a physician deflecting off responsibility or may serve to feed into the patient's 'reassurance-seeking' behavior [43]. During this process, the physician's respect and concern for the patient's welfare should be emphasized. The general practitioner should continuously gauge and address the patient's fear of and tolerance for medical uncertainties. Meanwhile, it is also important to not lose sight of more important healthcare maintenance examinations, annual screening studies and lifestyle modifications.

Pediatrics

While hypochondriacal concerns have been studied in the pediatric population, the diagnosis of hypochondriasis, *per se*, is likely infrequent and not described much in the literature. This is likely due to children's lack of knowledge of specific medical disorders that may engender recurrent concerns or fears. It could be that, for the most part, children generally respond to reassurance from physicians. On the other hand, somatic disorders (like headaches and stomachaches) do occur as a result of psychological distress. In childhood, recurrent abdominal pain (RAP) is a common reason for medical consultation in at least 10% of school-aged children. The outcomes of RAP among 28 young adults showed higher ratings on the Hypochondriacal Beliefs subscale of the IAS [44]. As adults, these patients also perceived themselves as more susceptible to illness and expressed more fear of death. A history of childhood somatic symptoms and psychosocial distress appear to increase the risk of developing hypochondriasis in adults. Likewise, separation anxiety and anxiety sensitivity in childhood are also associated with subsequent development of hypochondriasis in adulthood [45].

Several factors may increase the risk for hypochondriacal presentations in children. Somatic disorders seem to occur more in children who are conscientious, sensitive, insecure and anxious. Childhood adversity, especially overt neglect and sexual abuse, are associated with frequent medical consultations [46]. Interestingly, childhood memories regarding health may contribute to the development of hypochondriasis, although they may not distinguish between memories regarding their health and the health of a friend or stranger. Based on clinical experience, as children develop a better ability to communicate and are more aware of their emotions, the expression of emotion through somatic symptoms lessens [47]. We were unable to find any research literature on the treatment of hypochondriasis in the pediatric population.

Geriatrics

The diagnosis of hypochondriasis can be particularly baffling in the elderly patient because the likelihood of underlying medical conditions increases with age. It may be useful to refer to **Figure 1** to better conceptualize the process of hypochondriasis, especially with relation to health anxiety due to increased medical concerns in geriatric patients. Also, many elderly

patients are reluctant to admit to sadness or depressed mood. Instead, depressive symptoms are expressed as somatic and hypochondriacal symptoms. Additionally, the elderly patient is often faced with loss of loved ones, social isolation, reduced financial resources, restricted freedom and existential crisis. The hypochondriacal reaction is often an adaptive response to such unfamiliar psychosocial distress. Therefore, it may be difficult to distinguish hypochondriasis from systemic diseases, other psychiatric disorders and/or the challenges in adjustment to psychosocial changes [12,48].

In a study involving 60 older adults with hypochondriasis in a general medical setting and 100 control patients, adjusting for the confounding influences of medical morbidity, social isolation and psychiatric illness, elderly hypochondriacs were found to have similar attitudes, somatization, tendency to amplify bodily sensation or global assessment of health [49]. In fact, hypochondriasis, seemingly more prevalent in the elderly, may actually be healthy emotional and behavioral adaptations to aging, social isolation or depression [50]. Older patients worry and become more vigilant regarding their health and treatment. There is an adaptive value as the elderly can assert a sense of control and mastery over 'life-threatening' assault on their self-perception and self-esteem. Therefore, it is important to empathize with the functional value of hypochondriasis in the elderly patient. In helping the elderly patient face mounting medical problems and inevitable aging, Gurian emphasized the importance of working 'with' the patient, rather than doing something 'to' or 'for' patients [51]. He recommended telling the patient that there is no 'pill for loneliness or abandonment', while reassuring the patient that the doctors would 'try whatever … [that] might give temporary relief' and telling the patient, 'I won't give up on you'.

Oncology

Fear of cancer ('cancerphobia') is one of the most common hypochondriacal concerns seen in general practice worldwide, and may be somewhat more common in areas near chemical and industrial contamination. Paradoxically, these fears may be so profound that people avoid, rather than over-use, routine cancer screening [52]. Relatives of cancer patients may also develop excessive fear of cancer. For example, some female relatives of breast cancer patients have been shown to engage in excessive breast self-examination [53]. This fear may respond to a variety of interventions, including behavioral treatments [48] and SSRI antidepressants [54].

The presentation of hypochondriasis is significant in the cancer clinic, albeit for different reasons. Cancer patients with significant depressive symptoms have also been shown to have a higher degree of hypochondriasis. As such, their hypochondriacal concerns may be directed towards aspects of the cancer and its treatment, and possible cancer recurrence. Higher degrees of hypochondriasis were found on the MMPI in postmastectomy breast cancer patients compared with those treated with chemotherapy [55]. Fear of recurrence may be correlated with worse functional outcomes due to higher degrees of tension and anxiety [48]. A study of 201 cancer patients found that a higher degree of hypochondriasis on the Illness Behavior Questionnaire (IBQ) was associated with a previous history of psychiatric illness [56]. This fear may persist despite a negative follow-up evaluation and may last well past the usual 5-year cancer-free survival period that many patients find reassuring.

As there are no specific proven strategies for the treatment of hypochondriasis in oncological practice, we provide the following recommendations. In general, it is best to provide reassurance, monitor carefully for recurrence of cancer, manage the negative effects of interventions and avoid high-risk procedures. The oncologist may schedule nonsymptom-triggered follow-up visits at a slightly more frequent basis for hypochondriacal cancer patients, all the while gently confronting the excessive concerns these patients may express. Early psychiatric consultation for treatment of comorbid mood and ADs may be helpful in minimizing the obsessive worry that drives hypochondriacal behavior. In addition, access to cancer-specific support groups may help the hypochondriacal patient by partially meeting patient's dependency needs in a supportive environment [2,51].

Gastroenterology

Gastroenterological symptoms, especially abdominal pain, are common among patients with hypochondriasis. Functional gastrointestinal disorders (FGID), which comprise a large portion of many gastroenterology practices, have been associated with hypochondriasis, mood disorders and ADs [57]. In this setting, the estimate of patients having at least one FGID symptom is 69%. FGID includes irritable bowel syndrome (IBS), nonulcer dyspepsia, functional

abdominal bloating and functional constipation. IBS and constipation in particular have been found to be associated with hypochondriasis [58]. Hypochondriasis, GAD and duration of gastrointestinal pain are three factors that predict a diagnosis of IBS [59].

The definitions of FGID and IBS, however, have been recognized as imprecise, and the term 'enteric dysmotility', based on manometric readings, has been proposed as a substitute for FGID [60]. Manometric readings may help differentiate those with true gastrointestinal disease from those with hypochondriasis, which often yields normal manometry studies. One study has found that normal gut transit, assessed via a scintigraphic technique, is associated with male sex and high levels of hypochondriasis, while delayed gut transit is associated with female sex and low levels of hypochondriasis [61].

There are definite overlaps of FGID with hypochondriasis, especially with respect to management. A meta-analysis has shown that antidepressant medications effectively treat FGID [62]. Evidence is forthcoming still for the role of psychological interventions, such as CBT and relaxation therapy, for the treatment of IBS or nonulcerative dyspepsia [63], but antidepressants have been used for decades for IBS (e.g., tricyclic antidepressants [TCAs] for the diarrhea-prone and SSRIs for constipation-prone) patients, who may also have depression and anxiety.

Infectious diseases

The presentation of hypochondriasis in an infectious disease setting will generally be in the context of excessive fear of a life-threatening infectious disease [64]. This presentation may be partially driven by media and other attention to infectious diseases (IDs) that may present in an epidemic fashion, including influenza, avian flu, severe acute respiratory syndrome, tuberculosis, hepatitis C and HIV disease ('AIDS-phobia'). Patients have more hypochondriacal behavior if they had a significant number of previous infections [65]. Among those seeking treatment for sexually transmitted diseases, there is increased severity on the general hypochondriasis scale of the IBQ [66]. Patients may also report with concerns of parasitic infection, called delusions of parasitosis (see Dermatology), which is sometimes considered to be a psychotic disorder, although it conceptually fits well as an example of hypochondriasis. Overall, on presentation, the patient's reported symptoms may be innocuous or even absent [67].

There is a paucity of literature on the clinical approach to hypochondriasis in the ID setting. We make the following recommendations based on application of general principles (**Table 1**). When a patient presents with such concerns but appears to have minimal to no actual exposure to the hypochondriacal infectious disease, empathic confrontation of the excessive fear and offer of psychiatric treatment is reasonable, but may be actively resisted by the patient. The ID clinician may judiciously use laboratory studies in a screening manner, even if the hypochondriacal concern makes an actual serious infectious disease unlikely, to provide concrete evidence for the absence of active infection. Hypochondriacal patients may devalue the laboratory results, claiming laboratory error and the like, or promptly return to the clinic claiming a new high-risk exposure or being concerned that the 'disease' just has not 'shown up' in the tests yet (as with HIV antibody testing). Repeat of laboratory testing is rarely warranted, unless the unjustified concerns happen to fit a course of events for a serious illness that could have been missed.

In managing these patients over time, the ID physician should frankly share concern over hypochondriacal behavior with statements such as 'In my experience most patients are quite reassured to find out that they do not have [insert condition]. You do not seem to be reassured by this negative test result. Is it possible that your fears are excessive?' may help to confront the excess concern. In addition, maintenance of a close alliance with the primary care physician and consulting mental health provider may help to foster a team-based approach to the patient's care and minimize wasteful repeated assessments. Behavioral treatment of ID-related hypochondriacal symptoms (using an exposure-based/response–prevention paradigm) might be considered [68]. As seen in other clinical settings, screening for the associated psychiatric comorbidities of anxiety and mood disorders and psychotropic medication treatment may decrease obsessional thinking and hypochondriacal behavior [60].

Cardiovascular diseases

Cardiology is one of the clinical settings where hypochondriacal patients are most likely to present and at a relatively low threshold due to a perceived medical emergency. One obvious area is the evaluation of chest pain. Atypical chest pain and chest pain without cardiac risk factors for coronary artery disease (CAD) are challenging.

Patients with persistent palpitations may experience higher degrees of body amplification (a high degree of sensitivity to bodily sensations) that may partially account for their seeking medical consultation [69]. MMPI markers of hypochondriasis and hysteria, neuroticism and somatic complaints were associated with uncomplicated angina pectoris in middle-aged men but not significantly associated with incidence of myocardial infarction and coronary death [70]. However, increased hypochondriasis and hysteria scores on the MMPI were associated with a higher risk of coronary death in those who had survived an initial myocardial infarction. Among angina patients, increased score on the MMPI hypochondriasis scale correlated with less likelihood of clinical improvement in angina pain levels at 6-month follow-up. Similarly, a high MMPI hypochondriasis score was strongly correlated with continued chest pain in patients with minimal or no CAD [71].

Once acute cardiac events are ruled out, exploration of the psychological factors in the acute presentation is important, particularly PD, which may co-occur with hypochondriasis [72,73]. PD is reflected in acute presentation of brief episodes of hyperadrenergic symptoms (e.g. shortness of breath, palpitations, chest pain or tightness, sweating or tremor) accompanied by emotional and cognitive symptoms (e.g., fearfulness or catastrophic cognitions). This may be treated by the cardiologist, primary care physician or psychiatric consultant [68]. We propose the following clinical approach in the cardiology setting, based on application of general principles [201]. First, empathic confrontation of the excessive health-related anxiety is appropriate and necessary. Second, scheduled follow-up examinations and the regular use of noninvasive, low-risk procedures (e.g., electrocardiogram or exercise treadmill test as tolerated) are indicated. High-risk procedures, such as frequent cardiac catheterizations, should be avoided. Finally, clinical attention and major interventions should be shifted to risk reduction and cardiac rehabilitation. Hypochondriacal concerns in patients with cardiac devices (e.g., pacemakers and defibrillators) remain to be studied.

Dermatology

Studies have estimated the prevalence of psychiatric comorbidity to be 30–40% in patients with dermatological disorders [74,75]. Common hypochondriacal symptoms included acute anxiety being out of proportion to the objective findings, acne vulgaris, 'disturbance in skin texture', hypertrichosis, thinning of hair and vague complaints of hair/face. Even when no lesions were present, patients were concerned regarding past outbreaks and future recurrences [76].

Several dermatological diagnoses, such as dermatitis artefacta and neurotic excoriations, fit under the umbrella term of 'self-inflicted skin lesions', which can be purely medical (e.g., hepatic disease, pregnancy or xerosis), purely psychiatric (e.g., hypochondriasis or other somatoform disorders, delusion, depression or anxiety) or a mixture of both [77]. Both conditions should be considered in the differential diagnosis of hypochondriasis. Monosymptomatic hypochondriacal psychosis (MHP) is the manifestation of a single prominent belief that one is diseased in some specific way despite evidence to the contrary [78]. It is regarded as a somatic subtype of delusional disorder and excludes body dysmorphic disorder (which is limited to delusions regarding bodily appearance) [79]. MHP is best described in the dermatology literature. Conditions include delusions of parasitosis (infestation with vermin), dysmorphosis (unattractiveness) and bromosis (emission of foul body odor). There is usually a history of doctor shopping and multiple work-up, including skin biopsies and cultures.

The dermatologist plays a key role in ruling out true dermatologic conditions (e.g., an underlying pruritic dermatosis) via biopsy and medical conditions with laboratory studies [73]. The dermatologist may apply a combination of benign dermatologic therapies (i.e., topical antipruritic creams such as 5% doxepin, emollients and antibacterial creams for secondary bacterial infections). If the patient declines psychiatric referral, the dermatologist may prescribe psychiatric medications shown to be effective for a variety of disorders (**Table 1**). Pimozide and newer second-generation antipsychotics (e.g., risperidone and olanzapine) are the treatment of choice for MHP, although body dysmorphic disorder responds better to SSRIs [75]. Antidepressants, sometimes chosen for their sedative or antihistamine effect (e.g., TCAs), help complement the dermatologic treatment for dermatitis artefacta and neurotic excoriations [80].

Obstetrics & gynecology

Although hypochondriasis is equally prevalent among both genders, women reported 1.47-times more somatic symptoms than men among the ambulatory medical population. The authors explained that women may have a

heightened sense of bodily symptoms and self-vigilance, leading to increased gynecologic and obstetric visits [81].

During pregnancy, women have more hypochondriacal fears and conviction of disease than nonpregnant controls. Fear of dying and bodily preoccupations predominate during the third trimester [82]. The fear of death is expressed by up to 41% of women who have experienced a previously complicated delivery [83]. The culmination of these fears results in a fear of childbirth, which leads women to request elective cesarean section for delivery. Cognitive therapy, group psychoeducation and relaxation exercises have been shown to be effective in treating fear of childbirth [84]. Hyperemesis gravidarum (HG), a condition of severe, intractable nausea and vomiting separate from the common nausea and vomiting experienced by most women during pregnancy. Women with HG scored significantly higher on the MMPI-2 Hypochondriasis Scale [85]. The treatment for HG usually involves hospitalization, intravenous fluid resuscitation and other psychological treatments, such as hypnosis.

Several hypochondriacal concerns arise in the gynecological setting. Following the Women's Health Initiative finding that unopposed estrogen-replacement therapy increased the risk of endometrial cancer, a 'pill scare' erupted with patients worrying about increased risk of disease with aging, especially among women with prior hysterectomy [202]. In a study of 1142 women undergoing hysterectomy for benign conditions, 80% reported 'a little fear' and 29% reported 'a lot of fear' of developing gynecologic cancer without the procedure [86]. Another common hypochondriacal fear comes from abnormal Papanicolaou (Pap) smears. A study of 47 women referred for colposcopy after an abnormal Pap smear found the majority experienced anxiety due to fear of cancer and/or colposcopy [87]. Consistent with our general management recommendations, increased patient education regarding Pap smears and colposcopy, shorter wait times and mobilization of social support may help reduce patient anxiety.

Other common gynecologic symptoms associated with hypochondriasis include vulvodynia, chronic pelvic pain and urge urinary incontinence [88]. Women with urge incontinence score significantly higher on the MMPI-2 Hypochondriasis Scale than continent controls [89]. Hypochondriasis can cause pelvic floor spasm, which can lead to problems such as urge incontinence (overactive bladder), dyspareunia and fecal retention. Treatment options include physical therapy, Thiele massage, pelvic floor exercise with biofeedback and diazepam [90]. Women with vulvodynia have more psychological distress than women with other vulvar pathology. Treatment includes surgery, which results in complete resolution in 72% of women, and pelvic floor exercise with biofeedback [91].

Ophthalmology

In ophthalmologic practice, hypochondriasis may present with a significant conviction of a vision-threatening illness, either based on amplified response to actual visual or ocular symptoms, or based on no tangible symptoms [92]. Ophthalmologic illnesses that are likely to be the subject of hypochondriacal concern include glaucoma, cataracts and retinal disease. The hypochondriacal patient with concerns of glaucoma will request frequent assessment of the intraocular pressure, status of the optic nerve head and visual fields. In addition, such a patient may experience benign visual and ocular symptoms as heralding the onset of glaucoma [93].

Similarly, a patient with hypochondriacal concern of cataracts may present with obscure visual complaints that he/she is convinced are due to cataracts. Again, full functional assessment and examination of the crystalline lens may be at least temporarily assuaging. As with glaucoma, reassurance that even in the case of actual cataract development, the likelihood of a good surgical result and good visual function postoperatively may be shared with the hypochondriacal patient. Increased MMPI hypochondriasis score was associated with fear regarding having a cataract operation in a cohort of patients aged over 70 years [94].

Finally, fear of retinal disease may be especially threatening to the hypochondriacal patient. Such a patient is likely to present to the clinic with benign complaints of 'floaters' and other visual symptoms, possibly referable to vitreous and retinal pathology. Thorough funduscopic examination may serve to temporarily ameliorate these concerns, but they are likely to return in time. Hypochondriasis regarding the eye can be quite severe. Bebbington described two patients with MHP with persistent eye pain who sought frequent medical (including psychiatric) consultations without apparent relief, and both eventually committed suicide [95].

There is a dearth of evidence-based approaches for the treatment of hypochondriasis in the ophthalmology literature [96]. Paralleling

the clinical approach to hypochondriasis in other medical settings, the ophthalmologist would be well advised to consider a diagnosis of hypochondriasis early in the course of evaluation of patients with excessive symptomatic complaints and/or conviction of a serious vision-threatening disease accompanied by either temporary or minimal response to clinical examination and reassurance. Regular, thorough, scheduled assessment may assuage such fears and gentle confrontation of the excessive illness concern may be gradually introduced during each subsequent visit. Collaboration with either the primary care physician and/or a mental health provider is important for successful treatment.

Otolaryngology

Patients with somatic presentations frequent ear, nose and throat (ENT) practice include, but are not limited to, dizziness, vertigo, epistaxis, halitosis, pain, tinnitus, sense that the dental bite is abnormal and sinus problems [97]. Subjects who complain of tinnitus have more affective inhibition, irritability and denial compared with subjects who can cope positively with the symptoms. Patients with more psychological suffering presented higher levels of hypochondria, disease conviction and dysphoria [98].

Studies are limited in triaging these symptoms to underlying diagnoses, but it is likely that mood, anxiety and somatoform disorders are intricately involved. There is a spectrum between normal and unhealthy presentation involving personality, help-seeking behavior, age and cultural factors. In addition, the presentation may be colored by the course of a true medical illness, particularly if it presents in *forme fruste* fashion, which confuses the clinician.

Hypochondriasis has been studied in adults using traditional nosologic paradigms in ENT practice, at least for diagnosis and epidemiology. A validated questionnaire was administered to patients at 0 and 3 months, with approximately 13% of completers meeting the diagnosis [99]. This group made very frequent use of a range of medical services and took a large amount of medicine. Compared with the nonhypochondriacal ENT group, the hypochondriacal group had a more negative opinion regarding their own health, despite being less ill. Psychological or psychiatric consultation was suggested as 'necessary' to make the diagnosis [98]. As there is a lack of information specific to the treatment of hypochondriasis in the ENT setting, we recommend use of general treatment approaches (**Table 1**).

Urology

The epidemiology, diagnosis and management of hypochondriasis have not been well studied, specifically in urology and other surgical settings. Urological symptoms often include, but are not limited to, polyuria, oliguria, dysuria, sexual dysfunction, persistent concern of sexually transmitted diseases (see Infection Disease) and bladder or prostate cancer (see Oncology). While there are no established thresholds for the consideration of hypochondriasis, we propose that patients with more than three work-ups may be screened for hypochondriasis or referred for psychiatric consultation. It is likely that mood, anxiety and somatoform disorders explain many of these patients, although with aging, some males may struggle with changes in health, work productivity and retirement. Risk stratification is an important step. The clinician should exam sociodemographic variables and risk factors for disease. For example, risk of sexual dysfunction is well known [100] and age-appropriate factors for adolescents have been described [101]. If a patient is asked and screens positive for a history of sexual trauma, a psychiatric referral may be the next step for evaluation. Therefore, prior to performing a procedure to augment sexual function in males, it is important to screen for psychiatric disorders. There is likely a psychological component in many patients with sexual complaints, whether diagnosed with hypochondriasis or not [102]. A good start is setting a tone in which patients can share concerns and feel understood, regardless of the problem or planned work-up.

Pulmonary medicine

The literature contains little information regarding the epidemiology, diagnosis and management of hypochondriasis specifically to pulmonary medicine. Out-patient symptoms may often include, but are not limited to, cough, dyspnea, chest pain, odynophagia and fear of infection. Presentation may be a form of help-seeking behavior, particularly in older adults. Patients with more than three work-ups and a negative family history for illnesses in the differential may be screened for hypochondriasis or referred for psychiatric consultation. Patients with chronic airflow obstruction may have fear, anxiety or hypochondriasis superimposed on true illness [103]. This may be particularly true for out-patients or in-patients in which verified dyspnea with use portable oxygen and/or intubations. In the latter case, some patients experience the intensive care unit traumatically,

ingraining anxiety-related, perhaps post-traumatic behavior in the long-term if not addressed [104]. Until more studies are performed regarding hypochondriasis in the pulmonary patient population, we recommend use of general treatment principles including development of a trusting therapeutic alliance and other approaches (**Table 1**).

Neurology & rheumatology

We combined the sections of neurology and rheumatology as hypochondriasis in these two specialties may present similarly, most likely due to parallels in chronic evolution of symptoms and diagnostic uncertainty. MS and systemic lupus erythematosus are two classic examples. Patients with migraines [105], tension headaches [106], chronic fatigue syndrome [107] and fibromyalgia score higher on scales of hypochondriasis than controls. Chronic fatigue patients also scored higher in deviant personality traits on the MMPI, specifically emotionality, than chronic pain patients or healthy controls [108]. It may be tempting to dismiss subjective symptoms in patients who do not present with symptoms that are unsupported by physical or laboratory findings.

Hypochondriacal concerns often complicate the presentation and management of underlying rheumatolgical and neurological conditions. Individuals that seek medical attention for headaches score higher on hypochondriacal concerns than those with headaches who did not seek medical attention [109]. Hypochondriasis tendencies also weigh heavily on osteoarthritis and rheumatoid arthritis severity ratings [110]. On the other hand, scores of hypochondriasis increased in individuals after they developed low-back pain when compared with controls [111]. Individuals with medically confirmed postpolio syndrome also score higher in depressive and hypochondriacal symptomatology when compared with controls without postpolio, but score the same on neuropsychological measures of attention, memory and concentration [112]. MS and chronic fatigue patients appear to have identical illness behavior profiles and similar hypochondriasis scores, with denial of emotional factors being a poor predictor of outcome [98]. Finally, in epilepsy patients, MMPI Hypochondriasis scores dropped 1 year after epilepsy surgery, which fits the idea that personality or illness behavior may temporarily change [113]. There is a lack of specific recommendation for the treatment of hypochondriasis in the neurology and rheumatology settings. Consistent with general principles of treatment (**Table 1**), sympathetic communication and treatment of psychiatric comorbidities have been recommended [114].

Conclusion

Given the nature of somatic symptoms and obsessive fears of medical diseases, patients with hypochondriasis will repeatedly present to primary care and specialty physicians. The exact causes of hypchondriasis remain unclear but most likely involve multifactorial etiologies including psychological, social and neurobiological origins. Successful management of hypochondriasis begins with the establishment of a solid therapeutic alliance. Throughout the treatment process, use of reassurances, further investigations and specific treatments must be carefully selected. An appreciation for the continuum of hypochondriasis from excessive health concern to psychosis can also help guide treatment. Judicious use of reassurance could be helpful in the elderly and those who have suffered life-threatening diseases such as malignancies. However, antipsychotics might be considered in those with hypochondriacal psychosis. For most patients, antidepressants, CBT and other psychotherapies have been shown to be effective. Collaboration with and referral to mental health professionals are additional options. Again, the patient–physician alliance should be utilized to guide therapy.

Future perspective

As hypochondriasis has been aggravating patients and their physicians since antiquity, it is unlikely to disappear from the clinical landscape in the next 5–10 years. However, several trends appear likely. Greater use of noninvasive diagnostic procedures will allow for more thorough evaluations while preserving safety. More primary consideration of hypochondriasis early in the workup may allow for earlier treatment and psychiatric consultation. Criterion validity and diagnostic reliability will likely undergo further refinements using empirically gathered information rather than expert opinions. Emerging neuroscience (e.g., functional neuroimaging) will likely shed further light on the differences between hypochondriasis and other somatoform disorders and similarities between hypochondriasis and anxieties disorders. Enhanced appreciation for the etiologies of hypochondriasis could improve educational efforts and the physician–patient alliance. As for specific therapeutic

modalities, the publications of at least two large, rigorously conducted, controlled studies [25,32] will likely catalyze replication studies of these treatment approaches. Additional controlled studies will in turn lead to more widespread adaptation of evidence-based specific treatments in various practice settings. Earlier use of serotonergic psychopharmacology (e.g., SSRI agents) and/or psychotherapy will lead to decreased hypochondriacal suffering. Despite foreseeable technical advancements, the physician will continue to rely on his or her rapport with the patient to select the most suitable management approach.

Executive summary

- Hypochondriasis is a vexing somatoform disorder that most commonly presents in primary care and specialty medical settings in various ways.
- Understanding the etiological explanations for hypochondriasis may enhance the physician's appreciation for the patient's suffering and therefore improve the patient–physician alliance – the foundation to successful treatment.
- Initial encounters with the hypochondriacal patient should focus on detailed history and physical examination, judicious use of diagnostic studies with careful appraisal of benefits and risks and avoidance of premature reassurance.
- Ongoing management tasks include scheduling regular clinic visits, focusing on coping rather than curing and gradual introduction to psychological concepts.
- Specific treatments include cognitive–behavioral treatment and other psychotherapies, serotonergic antidepressants and antipsychotics (for hypochondriacal psychosis). The primary care and specialty physician should consider consulting with and/or referring to a mental health provider, after establishing a mutual agreement with the patient.

Bibliography

Papers of special note have been highlighted as of interest (•) or of considerable interest (••) to readers.

1. Barsky AJ, Fama JM, Bailey ED, Ahern DK: A prospective 4- to 5-year study of DSM-III-R hypochondriasis. *Arch. Gen. Psychiatry* 55(8), 737–744 (1998).
2. Kroenke K, Spitzer RL, Williams JB *et al.*: Physical symptoms in primary care: predictors of psychiatric disorders and functional impairment. *Arch. Fam. Med.* 3, 774–779 (1994).
3. American Psychiatric Association: *Diagnostic and Statistical Manual for Mental Disorders, Text Revision (DSM-IV-TR).* American Psychiatric Press, Washington DC, USA (2002).
4. Gureje O, Ustum TB, Simon GE: The syndrome of hypochondriasis: a cross-national study in primary care. *Psychol. Med.* 27, 1001–1010 (1997).
5. Fink P, Eva Ø, Toft T, Sparle KC, Frostholm L, Olesen F: A new, empirically established hypochondriasis diagnosis. *Am. J. Psychiatry* 161(9), 1680–1691 (2004).
6. Speckens AEM, Spinhoven P, Sloekers PP *et al.*: A validation study of the Whitely Index, the Illness Attitude Scale, and the Somatosensory Amplification Scale in general medical and general practice patients. *J. Psychosom. Res.* 40, 95–104 (1996).
7. Hiller W, Rief W, Fichter MM: Dimensional and categorical approaches to hypochondriasis. *Psychol. Med.* 32(4), 707–718 (2002).
8. Salkovskis PM, Rimes KA, Warwick HM, Clark DM: The Health Anxiety Inventory: development and validation of scales for the measurement of health anxiety and hypochondriasis. *Psychol. Med.* 32(5), 843–853 (2002).
9. Kroenke K, Spitzer RL, deGruy FV 3rd, Swindle R: A symptom checklist to screen for somatoform disorders in primary care. *Psychosomatics* 39(3), 263–272 (1998).
10. Lipsitt DR: Psychodynamic considerations of hypochondriasis. *Psychother. Psychosom.* 23(1–6), 132–41 (1974).
11. Busse EW: Hypochondriasis in the elderly. *Am. Fam. Physician* 25, 199–202 (1982).
12. Jones LR, Mabe PA 3rd, Riley WT: Illness coping strategies and hypochondriacal traits among medical inpatients. *Int. J. Psychiatry Med.* 19(4), 327–339 (1989).
13. Schmidt S, Strauss B, Braehler E: Subjective physical complaints and hypochondriacal features from an attachment theoretical perspective. *Psychol. Psychother.* 75, 313–332 (2002).
14. Ferguson E: Hypochondriacal concerns, symptom reporting and secondary gain mechanisms. *Br. J. Med. Psychol.* 71, 281–295 (1998).
15. Ferguson E, Swairbrick R, Clare S, Robinson E, Bignell CJ, Anderson C: Hypochondriacal concerns, somatosensory amplification, and primary and secondary cognitive appraisals. *Br. J. Med. Psychol.* 73(3), 355–369 (2000).
16. Barsky AJ, Ahern DK, Bailey ED, Saintfort R, Liu EB, Peekna HM. Hypochondriacal patients' appraisal of health and physical risks. *Am. J. Psychiatry* 158(5), 783–787 (2001).
17. Barsky AJ, Coeytaux RR, Sarnie MK, Cleary PD: Hypochondriacal patients' beliefs about good health. *Am. J. Psychiatry* 150(7), 1085–1089 (1993).
18. de Jong PJ, Haenen MA, Schmidt A, Mayer B: Hypocondriasis: the role of fear-confirming reasoning. *Behav. Res. Ther.* 36(1), 65–74 (1998).
19. van den Heuvel OA, Veltman DJ, Groenewegen JH *et al.*: Disoder-specific neuroanatomical correlates of attentional bias in obsessive–compulsive disorder, panic disorder and hypochondriasis. *Arch. Gen. Psychiatry* 62, 922–933 (2005).
20. Schmidt AJ, Wolfs-Takens DJ, Oosterlaan J, van den Hout MA: Psychological symptoms in hypochondriasis: attention-induced physical symptoms without sensory stimulation. *Psychother. Psychosom.* 61, 117–120 (1994).

21. Devinsky O, Mesad S, Alper K: Nondominant hemisphere lesions and conversion nonepileptic seizures. *J. Neuropsychiatry Clin. Neurosci.* 13, 367–373 (2001).
22. Holder-Perkins V, Wise TN, Williams DE: Hypochondriacal concerns: Management through understanding. *Prim. Care Companion J. Clin. Psychiatry* 2, 117–121 (2000).
23. Abramowitz JS, Schwartz SA, Whiteside SP: A contemporary conceptual model of hypochondriasis. *Mayo Clin. Proc.* 77, 1323–1330 (2002).
24. Busse EW: Hypochondriasis in the elderly. *Comp. Ther.* 13, 37–42 (1987).
25. Taylor S, Asmundson GJG, Coons MJ: Current directions in the treatment of hypochondriasis. *J. Cogn. Psychother.* 19, 285–310 (2005).

•• **Review of treatments for hypochondriasis, including meta-analysis of completed studies.**

26. Warwick HM, Clark DM, Cobb AM, Salkovskis PM: A controlled tiral of cognitive–behavioural treatment of hypochondriasis. *Br. J. Psychiatry* 169, 189–195 (1996).
27. Barsky AJ, Ahern DK: Cognitive behavior therapy for hypochondriasis. *JAMA* 291(12), 1464–1470 (2004).

• **One of the major cognitive behavior treatment studies on hypochondriasis.**

28. Clark DM, Salkovskis PM, Hackmann A *et al.*: Two psychological treatments for hypochondriasis. *Br. J. Psychiatry* 173, 218–225 (1998).
29. Buwalda FM, Bouman TK, Duijn MAJ: Psychoeducation for hypochondriasis: a comparison of a cognitive–behavioural approach and a problem-solving approach. *Behav. Res. Ther.* 45, 887–899 (2006).
30. Visser S, Bouman TK: The treatment of hypochondriasis: exposure plus response prevention vs cognitive therapy. *Behav. Res. Ther.* 39, 423–442 (2001).
31. Bouman TK: A community-based psychoeducational group approach to hypochondriasis. *Psychother. Psychosom.* 71(6), 326–332 (2002).
32. Fava GA, Grandi S, Rafanelli, C, Fabbri S, Czaaaro M: Explanatory therapy in hypochondriasis. *J. Clin. Psychiatry* 61(4), 317–322 (2000).
33. Fallon BA, Franklin RS, Marshall R *et al.*: The pharmacotherapy of hypochondriasis. *Psychopharm. Bull.* 32(4), 607–611 (1996).

•• **Review of medication treatment for hypochondriasis.**

34. Greeven A, van Balkom AJ, Visser S *et al.*: Cognitive behavior therapy and paroxetine in the treatment of hypochondriasis: a randomized placebo controlled trial. *Am. J. Psychiatry* 164(1), 91–99 (2007).

• **Most recent randomized, placebo-controlled study of hypochondriasis.**

35. Ungvari G, Vladar K: Pimozide treatment of delusion of infection. *Act. Nerv. Super.* 28(2), 103–107 (1986).
36. Hamann K, Avnstorp C: Delusions of infection treated by pimozide: a double-blind crossover clinical study. *Acta Derm. Venereol.* 62, 55–58 (1982).
37. Newmark TS, Al-Samarrai S: Hypochondriasis and ECT. *Psychosomatics* 45(1), 90–91 (2004).
38. Kellner R: Diagnosis and treatment of hypochondriacal syndromes. *Psychosomatics* 283(33), 178–179 (1992).
39. Barsky AJ, Wyshak G, Klerman GL: Psychiatric comorbidity in DSM-III-R hypochondriasis. *Arch. Gen. Psychiatry* 49, 101–108 (1992).

• **Study of major psychiatric comorbidities encountered in patients with hypochondriasis.**

40. House A: Hypochondriasis and related disorders. Assessment and management of patients referred for a psychiatric opinion. *Gen. Hosp. Psychiatry* 11(3), 156–165 (1989).
41. Faravelli C, Salvatori S, Galassi F, Aiazzi L, Drei C, Cabras P: Epidemiology of somatoform disorders: a community survey in Florence. *Soc. Psychiatry Psychiatr. Epidemiol.* 32(1), 24–29 (1997).
42. Escobar JE, Gara M, Waitzkin H *et al.*: DSM-IV hypochondriasis in primary care. *Gen. Hosp. Psychiatry* 20, 155–159 (1998).
43. Salkovskis PN, Warwick HN: Morbid preoccupations, health anxiety and reassurance: a cognitive–behavioral approach to hypochondriasis. *Behav. Res. Ther.* 24, 597–602 (1986).
44. Campo JV, Lorenzo CD, Chiappetta L *et al.*: Adult outcomes of pediatric recurrent abdominal pain: do they just grow out of it? *Pediatrics* 108, E1 (2001).
45. Noyes R, Stuart S, Langbehn DR, Happel RL, Longley SL, Yagla SJ: Childhood antecedents of hypochondriasis. *Psychosomatics* 43, 282–289 (2002).
46. Fiddler M, Jackson J, Kapur N, Wells A, Creed F: Childhood adversity and frequent medical consultations. *Gen. Hosp. Psychiatry* 26, 367–377 (2004).
47. Durso FT, Reardon R, Shore WJ, Delys SM: Memory processes and hypochondriacal tendencies. *J. Nerv. Ment. Dis.* 179(5), 279–283 (1991).
48. Gottlieb GL: Hypochondriasis: a psychosomatic problem in the elderly. *Adv. Psychosom. Med.* 19, 67–84 (1989).
49. Barsky AJ, Frank CB, Clear PD, Wyshak G, Klerman GL: The relation between hypochondriasis and age. *Am. J. Psychiatry* 148(7), 923–928 (1991).
50. Stein EM: When is hypochondriasis not hypochondriasis? *Geriatrics* 58(3), 41–42 (2003).
51. Gurian B: Coping with hypochondriasis in older patients. *Geriatrics* 46(9), 71–77 (1991).
52. Brown RS, Lees-Haley PR: Fear of future illness, chemical AIDS, and cancerphobia: a review. *Psychol. Rep.* 71(1), 187–207 (1992).
53. Epstein SA, Lin TH, Audrain J, Stefanek M, Rimer B, Lerman C: Excessive breast self-examination among first-degree relatives of newly diagnosed breast cancer patients. High-Risk Breast Cancer Consortium. *Psychosomatics* 38(3), 253–261 (1997).
54. Viswanathan R, Paradis C: Treatment of cancer phobia with fluoxetine. *Am. J. Psychiatry* 148(8), 1090 (1991).
55. Kirkcaldy BD, Kobylinska E: Psychological characteristics of breast cancer patients. *Psychother. Psychosom.* 48(1–4), 32–43 (1987).
56. Grassi L, Rosti G: Psychiatric and psychosocial concomitants of abnormal illness behaviours in patients with cancer. *Psychother. Psychosom.* 65(5), 246–252 (1996).
57. Hiller W, Cuntz U, Rief W, Fichter M: Searching for a gastrointestinal subgroup within the somatoform disorders. *Psychosomatics* 42, 14–20 (2001).
58. Heymen S, Wexner SD, Gulledge AD: MMPI assessment of patients with functional bowel disorders. *Dis. Colon Rectum* 36(6), 593–596 (1993).
59. Trikas P, Vlachonikolis I, Phil D *et al.*: Core mental state in irritable bowel syndrome. *Psychosom. Med.* 61, 781–788 (1999).
60. Wingate D, Hongo M, Kellow J, Lindberg G, Smout A: Disorders of gastrointestinal motility: towards a new classification. *J. Gastroenterol. Hepatol.* 17, S1–S14 (2002).
61. Bennett EJ, Evans P, Scott AM *et al.*: Psychological and sex features of delayed gut transit in functional gastrointestinal disorders. *Gut* 46, 83–87 (2000).
62. Jackson JL, O'Malley PG, Tomkins G *et al.*: Treatment of functional gastrointestinal disorders with antidepressant medications: a meta-analysis. *Am. J. Med.* 108(1), 65–72 (2000).

63. Soo S, Moayyedi P, Deeks J, Delaney B, Lewis M, Forman D: Psychological interventions for non-ulcer dyspepsia. *Cochrane Database Syst. Rev.* CD002301 (2005).
64. Wurtz R: Psychiatric diseases presenting as infectious diseases. *Clin. Infect. Dis.* 26(4), 924–932 (1998).
65. Ross MW: Illness behavior among patients attending a sexually transmitted disease clinic. *Sex. Trans. Dis.* 14(3), 174–179 (1987).
66. Ikkos G, Fitzpatrick R, Frost D, Nazeer S: Psychological disturbance an illness behavior in a clinic for sexually transmitted diseases. *Br. J. Med. Psychol.* 60(Pt 2), 121–126 (1987).
67. Weiss MG: Parasitic diseases and psychiatric illness. *Can. J. Psychiatry* 39(10), 623–628 (1994).
68. Logsdail S, Lovell K, Warwick H, Marks I: Behavioural treatment of AIDS-focused illness phobia. *Br. J. Psychiatry* 159, 422–425 (1991).
69. Barsky AJ, Ahern DK, Bailey ED, Delamater BA: Predictors of persistent palpitations and continued medical utilization. *J. Fam. Pract.* 42(5), 465–472 (1996).
70. Shekelle RB, Vernon SW, Ostfield AM: Personality and coronary heart disease. *Psychosom. Med.* 53, 176–184 (1991).
71. Williams RB, Haney TL, McKinnis RA *et al.*: Psychosocial and physical predictors of anginal pain relief with medical management. *Psychosom. Med.* 48(3/4), 200–210 (1986).
72. Katon WJ: Chest pain, cardiac disease, and panic disorder. *J. Clin. Psychiatry* 51, 27–30 (1990).
73. Barsky AJ, Cleary PD, Sarnie MK, Ruskin JN: Panic disorder, palpitations, and the awareness of cardiac activity. *J. Nerv. Ment. Dis.* 182(2), 63–71 (1994).
74. Gupta MA, Gupta AK: Psychiatric and psychological co-morbidity in patients with dermatologic disorders: epidemiology and management. *Am. J. Clin. Dermatol.* 4(12), 883–842 (2003).
75. Picardi A, Pasquini P, Abeni D, Fassone G, Mazzotti E, Fava GA: Psychosomatic assessment of skin diseases in clinical practice. *Psychother. Psychosom.* 74(5), 315–322 (2005).
76. Woodruff PWR, Higgins EM, du Vivier AWP, Wessely S. Psychiatric illness in patients referred to a dermatology–psychiatry clinic. *Gen. Hosp. Psychiatry* 19, 29–35 (1997).
77. Cyr PR, Dreher GK: Neurotic excoriations. *Am. Fam. Physician* 64(12), 1981–1984 (2001).
78. Bishop ER Jr: Monosymptomatic hypochondriacal syndromes in dermatology. *J. Am. Acad. Dermatol.* 9(1), 152–158 (1983).
79. Lorenzo CR, Koo J: Pimozide in dermatologic practice a comprehensive review. *Am. J. Clin. Derm.* 5(5), 339–349 (2004).
80. Gupta MA, Gupta AK : The use of antidepressant drugs in dermatology. *J. Eur. Acad. Dermatol. Venereol.* 15, 512–518 (2001).
81. Barsky AJ, Peekna HM, Borus JF: Somatic symptom reporting in women and men. *J. Gen. Intern. Med.* 16, 266–275 (2001).
82. Fava GA, Grandi S, Michelacci L *et al.*: Hypochondriacal fears and beliefs in pregnancy. *Acta Psychiatr. Scand.* 82(1), 70–72 (1990).
83. Saisto T, Halmesmaki E: Fear of childbirth: a neglected dilemma. *Acta Obstet. Gynecol. Scand.* 82, 201–208 (2003).
84. Saisto T, Toivanen R, Salmela-Aro K, Halmesmaki E: Therapeutic group psychoeducation and relaxation in treating fear of childbirth. *Acta Obstet. Gynecol. Scand.* 85(11), 1315–1319 (2006).
85. Simpson SW, Goodwin TM, Robins SB *et al.*: Psychological factors and hyperemesis gravidarum. *J. Womens Health Gend. Based Med.* 10(5), 471–477 (2001).
86. Gallicchio L, Harvey LA, Kjerulff KH. Fear of cancer among women undergoing hysterectomy for benign conditions. *Psychosom. Med.* 67(3), 420–424 (2005).
87. Bekkers RL, van der Donck M, Klaver FM, van Minnen A, Massuger LF: Variables influencing anxiety of patients with abnormal cervical smears referred for colposcopy. *J. Psychosom. Obstet. Gynaecol.* 23(4), 257–261 (2002).
88. Stewart DE. Women's reproductive issues chronic gynecologic pain. *Gen. Hosp. Psychiatry* 18, 230–237 (1996).
89. Walters MD. Taylor S, Schoenfeld LS: Psychosexual study of women with detrusor instability. *Obstet. Gynecol.* 75(1), 22–26 (1990).
90. Lukban JC, Whitemore KE: Treatment of the overactive bladder and painful bladder syndrome. *Clin. Obstet. Gynecol.* 45(1), 273–285 (2002).
91. Stewart DE, Reicher AE, Gerulath AH, Boydell KM: Vulvodynia and psychological distress. *Obestet. Gynecol.* 84, 587–590 (1994).
92. Spahn C, Wiek J, Burger T, Hansen L: Psychosomatic aspects in patients with central serous chorioretinopathy. *Br. J. Ophthalmol.* 87, 704–708 (2003).
93. Weller M, Wiedemann: Hysterical symptoms in ophthalmology. *Documenta Ophthalmamologica* 73, 1–33 (1989).
94. Fagerstrom R: Fear of a cataract operation in aged persons. *Psychol. Rep.* 72(3 Pt 2), 1339–1346 (1993).
95. Bebbington PE: Monosymptomatic hypochondriasis, abnormal illness behavior and suicide. *Br. J. Psychiatry* 128, 475–478 (1976).
96. Fenton P: Case reports on psychosomatic eye disorders. *Documenta Ophthalmologica* 31, 351–356 (1992).
97. Jagger RG, Korszun A: Phantom bite revisited. *Br. Dent. J.* 197(5), 241–243 (2004).
98. Savastano M, Maron MB: Importance of behavior in response to tinnitus symptoms. *Int. Tinnitus J.* 5(2), 121–124 (1999).
99. Schmidt AJ, van Roosmalen R, van der Beek JM, Lousberg R: Hypochondriasis in ENT practice. *Clin. Otolaryngol. Allied Sci.* 18(6), 508–511 (1993).
100. Lewis RW, Fugl-Meyer KS, Bosch R *et al.*: Epidemiology/risk factors of sexual dysfunction. *J. Sex. Med.* 1(1), 35–39 (2004).
101. Perez-Brayfield MR, Baseman A, Kirsch AJ: Adolescent urology. *Adolesc. Med. Clin.* 16(1), 215–227 (2005).
102. van Lankveld JJ, van den Hout MA, Spigt MG, van Koeveringe GA: Cogntive changes predict continued recovery of erectile functioning versus relapse after discontinuation of sildenafil treatment for male erectile dysfunction. *Psychosom. Med.* 65(4), 709–718 (2003).
103. Kellner R, Samet JM, Pathak D: Hypochondriacal concerns and somatic symptoms in patients with chronic airflow obstruction. *J. Psychosom. Res.* 31(5), 575–582 (1987).
104. Granja C, Lopes A, Moreira S *et al.*: Patients' recollections of experiences in the intensive care unit may affect their quality of life. *Crit. Care* 9(2), 145–146 (2005).
105. Fan AY, GU RJ, Zhou AN: An MMPI control study: Chinese migraineurs during frequent headache attack intervals. *Headache* 35(8), 475–478 (1995).
106. Inan L, Soykan C, Tulunay, FC: MMPI profiles of Turkish headaches sufferers. *Headache* 34(3), 152–154 (1994).

107. Trigwell P, Hatcher S, Johnson M, Stanley P, House A: 'Abnormal' illness behavior in chronic fatigue syndrome and multiple sclerosis. *BMJ* 311, 15–18 (1995).
108. Blakely AA, Howard RC, Sosich RM, Murdoch JC, Menkes DB, Spears GF: Psychiatric symptoms, personality and ways of coping in chronic fatigue syndrome. *Psychol. Med.* 21(2), 347–362 (1991).
109. Ziegler, DK, Paolo AM: Headache symptoms and psychological profile of headache-prone individuals. A comparison of clinic patients and controls. *Arch Neurol.* 52(6), 602–606 (1995).
110. Lichtenberg PA, Swensen CH, Skehan MW: Further investigation of the role of personality, lifestyle and arthritic severity in predicting pain. *J. Psychosom. Res.* 30(3), 327–337 (1986).
111. Hansen FR, Biering-Sorensen F, Schroll M: Minnesota Multiphasic Personality Inventory profiles in persons with or without low back pain. A 20-year follow-up study. *Spine* 21(16), 1939–1940 (1996).
112. Hazendonk KM, Crowe SF: A neuropsychological study of the postpolio syndrome: support for depression with neuropsychological impairment. *Neuropsychiatry Neuropsychol. Behav. Neurol.* 13(2), 112–118 (2000).
113. Wachi, M, Tomikawa M, Fukuda M *et al.*: Neuropsychological changes after surgical treatment for temporal lobe epilepsy. *Epilepsia* 42(S6), 4–8 (2001).
114. Reuber M, Mitchell AJ, Howlett SJ *et al.*: Functional symptoms in neurology: questions and answers. *J. Neurol. Neurosurg. Psychiatry* 76(3), 307–314 (2005).

Websites

201. Hilty DM, Marks SM, Bourgeois JA, Yellowlees PM: Hypochondriasis. In: *EMedicine Textbook of Medicine, Surgery, OB/GYN and Psychiatry.* Zevitz M (Ed.). eMedicine, Inc., St Petersburg, FL, USA (2002) www.emedicine.com
•• **Review of diagnostic and treatment principles.**
202. Blumenthal PD: Reflections on the WHI findings: avoiding a pill scare and taking sensible steps forward. Medscape Women's Health eJournal (2002) www.medscape.com/viewarticle/438596.