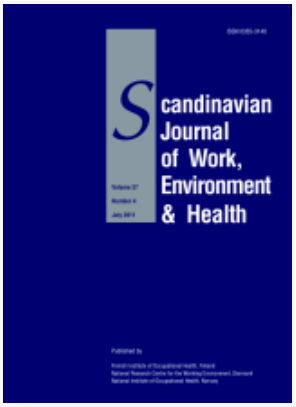

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Food intolerance and psychosomatic experience

by Morten H Vatn[1]

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The mechanism behind food intolerance is regarded as one of the greatest enigmas in modern medicine. Its multidisciplinary modalities, sharing properties with immunologic, environmental and psychosomatic reaction patterns, make the grouping and individual approach rather complex in regard to classification of disease, diagnosis, and therapy. In this presentation, emphasis is placed on emerging knowledge about immunologic reactions in the bowel and blood circulation as a balance against the evidence for psychosomatic reactions. As a basis for discussion, the psychosomatic experience of patients with food intolerance is illustrated by a brief presentation of three studies. The first was cross-sectional. The second was prospective and controlled. The third was a double-blind placebo-controlled study using provocation with an active substance in comparison with a placebo. Both the patients and referents were characterized by interviews and scoring systems based on questionnaires. When either combined or kept separately, the results of these studies suggest a correlation between somatic and neuropsychiatric symptoms and emotional disturbances. It also seems that patients identifying themselves as sensitive to food and chemicals have higher scores for depression, anxiety, shyness, and defensiveness. On the other hand, in 62% of the cases, there was agreement between diet history and provocation. The next-of-kin of the food intolerant subjects also had various diseases more frequently, increased immunoglobulin E levels, and a higher prevalence of allergy and infectious diseases. For the same patients, major distress or trauma during childhood, as well as undifferentiated somatoform disorders, were common. In conclusion, both somatic symptomatology and self-reported psychological disturbances can be regarded as rather weak documentations. The experience within these fields today may, however, seem promising for further research. One should then emphasize the importance of the nature of exposure and the nature of disposition, represented by immunologic or psychological mechanisms, or a combination of both. Future studies should be aimed at classifying patients into subgroups through the use of improved diagnostic and clinical methods, assessment of organ sensitivity, and immunologic and psychological tests.

Key terms allergy, diagnosis, somatic, symptoms, treatment.

A broad definition of food intolerance includes any type of adverse reaction to food, such as allergy, psychic aversion, malabsorption, and toxic reactions. Many of these reactions are similar to allergy but do not fulfill the criteria of typical allergic reactions of type I—IV (1). Although the increasing knowledge on subcellular reactions provides a rather complete set of definitions of immunologic reactions to food (2), a practical approach is to separate the common adverse reactions into specific or allergic and nonspecific or intolerant reactions (3). The differentiation between these two types of reactions may be difficult on the grounds of symptomatology alone. A nonspecific reaction is probable when no diagnostic criteria of allergy are fulfilled for a patient with evidence of repeated food intolerance. Such a nonspecific reaction to food may also be based on emotional disturbances (4). Psychoneurological (5) and neuroimmunologic research has provided increasing evidence for both a psychological etiology (6) and a neuromolecular involvement in the pathogenesis of adverse reactions to food. The psychosomatic approach to the problem of food intolerance today includes a combined strategy of immunologic and psychological involvement. Consequently, the therapeutic potential has been expanded enormously. Still, the verification, therapy, and evaluation of therapeutic response are often very difficult and time-consuming for these patients. In the following discussion, an attempt is made to present a survey of the complexity of the problems connected to the concept with food intolerance.

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Definitions of food intolerance

Adverse reactions to food can be divided into toxic and nontoxic categories, and the nontoxic reactions into immune-mediated (allergic) and nonimmune-mediated (intolerant) groups (2, 3). Food intolerance can be enzymatic, pharmacologic or undefined. It is important to realize that components or contaminations of everyday foods such as cabbage, bananas, potatoes and nuts may cause toxic reactions that are indistinguishable from pharmacological or undefined reactions. These undefined reactions, on the other hand, can include both immunologic and psychosomatic or emotional reactions.

The undefined immunologic reactions can occur in the gut (7) or other target organs (8, 9, 10) and are mediated by the blood stream (11) or the nervous system (12). Some of these reactions can occur as a result of increased permeability of the gut mucosa to food antigens (13, 14, 15) and result in cell activation with cytokine production and transport. These products again can cause inflammatory responses and act on circulation or neuroimmunologic functions, which in turn can affect fluid transportation, motility, blood flow or the affection of distant organs (16). Many of the described mechanisms rely on animal studies and have to be verified in further studies on humans. The psychological or emotional mechanisms of food intolerance can also be regarded as part of several psychosomatic syndromes, including somatization, irritable bowel syndrome, idiopathic gastrointestinal pain, and migraine (17, 18, 19). The diagnosis of food intolerance in humans depends also on the reliability of the symptoms described by the patients. The lack of objectivity and uncertainty regarding symptom description, even in double-blind, placebo-controlled food challenge, have created a need for somatic and psychological measures on an objective basis. Detailed examinations, especially by nutritionists, with emphasis on symptom and meal relationships and the repeatability of symptoms, have improved the diagnosis of food intolerance. The use of internationally validated questionnaires and modern interview techniques have improved the methods used to provide a psychological characterization of patients. At present, some few studies have addressed the problems of eating disorders. The present paper discusses studies of food intolerance in relation to psychosomatic problems in general and in clinical situations.

A cross-sectional study

In a study of self-reported illness from foods and chemicals among 490 male and female undergraduate students at the University of Arizona (20), 24% of the subjects reported at least occasional illness from one or more foods. The food-intolerant group was 80% female as opposed to 40% in the tolerant group. A weak but significant correlation was found between intolerance to food and chemicals, parallel to a more common occurrence of reactions to pollen. The intolerant subjects, in comparison with the tolerant ones, reported significantly more limitation of the opioid foods (fats, sweets, breads) and more illness from opioid drugs, small amounts of alcoholic drinks, and late meals. This is consistent with the time-dependent sensitization (TDS) model (21). The result remained the same even when the simultaneous effects of depression, anxiety, and gender were used as covariates in the statistical analysis. The intolerant groups scored significantly higher for depression, anxiety, and shyness. The results of this prospective cross-sectional study were consistent with the previously reported association between food intolerance and depression, anxiety, and somatization (22, 23, 24, 25). The covariance and regression analysis indicated, however, that the somatic and neuropsychiatric symptoms may have a specific component related to food or chemicals. Such symptoms occur in addition to, rather than as a part of, an emotional disturbance. These results support clinical experience (26) demonstrating a significantly stronger tendency towards somatic disease among food-intolerant patients than among referents. Furthermore, both the study on the student group and the clinical studies have demonstrated that self-identification as being sensitive to food and chemicals is associated with a higher level of depression, anxiety, shyness, and defensiveness. A major problem in such studies is, however, the lack of objective verification of the self-reported information.

A prospective, controlled study

In a prospective, controlled study of 26 "environmentally ill" subjects (23) a combination of a structured interview for DSM-III personality disorders, a semistructured interview used to gather sociodemographic and illness data, and self-administered questionnaires helped reveal illness and hypochondrial behavior. The environmentally ill subjects were more likely to meet the criteria for one or more personality disorders. They also exhibited more somatic, mood, and anxiety symptoms. Both the aforementioned cross-sectional study and the prospective, controlled study suggest that subjects diagnosed as food intolerant or environmentally ill may suffer from psychological distress. In other words, psychological distress may account for some or all of the symptoms that result in a diagnosis of food intolerance or an environmentally ill state (27).

Another working hypothesis concerns "neuropathic manifestations" of food or other substances (28). Several common complaints related to the central nervous system, such as headache, hyperactivity, learning problems, emotional and behavioral problems, and episodes of insomnia or anxiety alternating with periods of listlessness or fatigue, were linked with allergy (29). However, there is no proof of a consistent relationship between the central nervous system and food allergy. Not even the use of double-blind, placebo-controlled food challenge has provided such evidence (30). There is, however, some evidence that dietary factors play a role, probably for a minority of patients, in triggering migraine episodes, by triggering histamine and the prostaglandins PG2a or PGD2 (31, 32, 33). In addition, vasoactive amines, such as histamines, tyramine, phenyl-ethylamine and phenylephrine, have been reported to be the cause of headache (34).

The term "pseudo-food allergy" has been used (35) to describe a group of people, usually adults, who believe that a wide variety of somatic symptoms are caused by food allergy. These symptoms include headache, insomnia, fatigue, and generalized aches and pain. These persons may seriously restrict their diet, making it nutritionally unbalanced so as to even result in disease. As demonstrated in a double-blind, placebo-controlled food challenge (36), many of these patients had no food allergy, but did have definite psychological problems.

A prospective, double-blind, placebo-controlled study

A comparison between 17 selected patients with food intolerance and 34 healthy referents (26) showed that all the patients reacted to one or more food substances during double-blind, placebo-controlled food challenge. Agreement was seen between the diet history and the provocation results in 62% of the individual food challenges. No reaction to food or the placebo occurred in the reference group. Disease proneness was significantly more common among the patients than the referents, as was immunologic abnormalities, elevation of total immunoglobulin E, and the frequency of allergy and infectious diseases among next-of-kin. In addition, 13 of 17 patients reported major distress or trauma during childhood, including loss or separation of parents and violence or major psychiatric illness. All but four were also currently experiencing major distressing life events, most often involving the spouse. Only two patients had experienced a reasonably stable childhood and were currently in a stable life situation. All the patients fulfilled the diagnostic criteria for undifferentiated somatoform disorders, and for seven of them only the diagnostic criteria for undifferentiated somatoform disorders were met. Still, 11 of 15 patients reported a significant improvement in symptoms after 4 months on a diet related to the results of the food challenge (26). A control examination was done 3 years later for six of these patients. It consisted of an open food provocation for 2 weeks, and it resulted in significant reappearance of symptoms. Significant changes occurred simultaneously in serum eosinophilic cationic protein (ECP), interleukin-4, and gamma interferon (37). The combined evidence of somatic disorders and psychic involvement in this study may indicate a multifactorial etiopathogenesis, balancing between immunologic, psychobiological, and psychological factors.

In conclusion, several foods, food additives, chemicals, and microbiological exposures can cause non IgE-mediated immunologic reactions that may result in systemic or single organ symptoms. At present, this connection generally lacks scientific verification in humans. Moreover, many of the persons supposedly afflicted with food intolerance also have psychological problems. Nevertheless, not only the somatic symptoms, but also the self-reported psychological disturbances can be regarded as rather weak documentations. However, our current knowledge seems promising for future research. One should then emphasize the importance of the nature of exposure and the nature of disposition, as represented by immunologic or psychological mechanisms, or a combination of both. An understanding of these mechanisms is only beginning to emerge, and the multitude of reactions to a variety of foods and chemicals will have to be elucidated in future studies.

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