Pruritus/Introduction

For many years it was believed that pruritus ("itch") was a sub-form of pain ("the little brother of pain"), as it can be relieved by painful stimuli (scratching). It is now known that while there are some parallels between the two, there are also clear differences between them. ^[1] Chronic pruritus (lasting longer than 6 weeks) is not only caused by skin diseases, but also by many different diseases (such as neurological, i.e. nerve-related diseases).

Chronic pruritus (CP) is quite common in the general population - almost one in four people are affected by it in their lifetime. ^[2] In a study by Ständer et al. it was determined that slightly more women were affected by CP than men (about 55% versus about 46%). ^[3] Sex differences are also evident with regard to the underlying disease and additional diseases: For example, in women itching is more often caused by a neurological (nerve-related) or mental illness, in men skin diseases are more often the cause. While women more often suffer from psychological or rheumatological diseases in addition to itching, men are more often affected by cardiovascular diseases or diseases of the urinary and reproductive organs in addition to itching.

Those affected by pruritus often suffer considerably, which often leads to psychological illnesses such as depression or anxiety. More women than men are affected by anxiety or depressive symptoms. ^{[3] [4]} Whether anxiety and depression are also risk factors for chronic pruritus is not yet known. Individual studies have shown that social support (e.g. from friends or family) has a positive effect on chronic itch. ^{[5] [6]} This may be explained that those affected can cope better with stress through social support ^[5]

Various cells of the skin release substances (e.g. histamine) in response to certain stimuli, which trigger the itching sensation. These messenger substances attach themselves to specialized nerve fibers in the skin at certain points (so-called receptors) according to the lock-and-key principle. The nerve fibers activated in this way transmit signals to the spinal cord. The spinal cord then transmits the information to the brain. Here, certain regions are activated, through which the itching sensation is then perceived. Although this signal pathway has been intensively researched in recent years, knowledge about differences between men and women is very limited. Nevertheless, in studies as early as 1990 women demonstrated a stronger reaction to the itch-inducing substance histamine than men (stronger itching sensation, stronger skin reaction). ^[7] However, this stronger reaction was not likely caused by the nerve fibers, but rather by other physical as well as psychological factors. Overall, several studies have indicated that women perceive itching more intensely than men. ^{[3][4][8]} This correlates with the results of pain studies. Here, women also reported higher pain intensities and suffered more often from chronic pain than men. ^{[9] [10]}

In addition, different ways in which the brain processes the itching sensation also appears to be responsible for sex differences in pruritus. Activation of various brain regions play a role in the processing of itch in the brain. Based on results from pain research, it is believed that the interaction of different regions with different functions are involved in itch processing. In women, an increased activation of the brain regions responsible for deciphering the tactile stimuli ("where and how much does it itch"), the emotional assessment ("how unpleasant is the itching") and the planning of action (planning the response to the itching stimulus - the scratching) has been found. By analogy of studies on pain processing, it would therefore be conceivable that women perceive itch more intensely, both emotionally and mentally. The increased stronger activation of brain regions responsible for action planning could also explain why women tend to scratch more, which leads to larger scratch marks on the skin.^[3]

Apart from biological differences in the processing of itch, not only different behavioral patterns

(increased scratching in women) seem to play a role, but also how the symptoms are being coped and the resulting psychological consequences. The size of the affected skin also seems to play a role. For example, in women there is an association between itching all over the body at the onset of the symptoms and anxiety and depression scores.^{[3] [4]} In men, scratching seems to play a greater role. Here, an association between depression scores and the patient group with numerous scratching marks was observed. It is therefore conceivable that feelings of loss of control or even helplessness with regard to frustrating itching in men could promote depressive symptoms. Due to the itching sensation, the quality of life appears to be more lastingly impaired in women than in men.^[3]From studies that have examined patients with other partly disfiguring skin diseases, it is known that young women in particular suffer from the diseases, whereby the desired role or the common ideal of beauty in society is an important factor.^{[11] [12]} Whether this can also be transferred to patients with chronic itching needs to be investigated in further studies.

It should be noted that many issues have been investigated only very little or not at all to date, so there is an urgent need for further studies to offer those affected a sex and gender-adapted diagnosis and therapy.

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