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Psychosocial aspects of cancer pain

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Abstract. Pain, and especially cancer pain, is not a pure nociceptive, physical experience, but involves different dimensions of man, such as personality, affect, cognition, behavior and social relations. Cancer pain is best conceptualized as the convergence of multiple activated systems with feedback mechanisms to a complex, multidimensional model. The psychosocial aspects of this multidimensional model will be analyzed with special emphasis on results from recent research. Although most research has been conducted on the role of affect and cognition in cancer pain, data on other factors such as personality, behavior or social aspects exist and will be presented. In the second part of this paper the implications of these results for therapeutic strategies in clinical work will be discussed. Although a considerable body of knowledge exists to support the hypothesis of a multidimensional model of cancer pain, where psychosocial variables play an important role, only a few studies address the issue of to what degree different factors exercise their influence. This may be different from patient to patient and may change over the course of the disease. Whatever importance these single variables in the multidimensional model of cancer pain may have, the patient is best treated when none of these aspects is neglected in the assessment and all are taken care of in the treatment. A multidisciplinary team, with a psychiatrist as one of the team members, is often best prepared to fulfill this task.

Key words: Cancer pain—Psychosocial—Pain behaviour

Introduction

Pain, and especially cancer pain, is not a pure nociceptive, physical experience, but involves different dimensions of man, such as affect, cognition, behavior or social relations. Evidence over the past few decades has indicated that the cancer pain experience can only be conceptualized as a convergence of multiple activated systems to a complex, multidimensional model with reciprocal influences. Some of these indications, like the impact of pain interpretation on pain intensity, the association between chronic pain and depression, the role of neurotransmitters and psychotropics and the usefulness of non-pharmacological interventions in cancer pain management, will be discussed later.

The International Association for the Study of Pain (IASP) has expressed this multidimensional concept in their definition that pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or is described in terms of such damage" [19].

In the following, different aspects of the multidimensional model of pain will be analyzed and major areas of research and their implications for therapeutic strategies will be discussed. Although a separate discussion of different aspects of cancer pain is somewhat arteficial, it seems to be necessary for didactic reasons. Nevertheless, it has to be remembered, that all aspects of cancer pain do influence each other and are linked together.

Assessment of cancer pain

Results of clinical work and research are closely related to the methods and instruments used to assess cancer pain. While a few decades ago, physicians "rated" pain intensity by the overt behavior of their patients in response to pain it is now well accepted, that the pain behavior is only one aspect of this subjective experience. In a recent survey, 83% of medical students in the USA agreed with the statement, that the patient is the best judge of cancer pain intensity [30].

Visual analogue scales (VAS) like the Memorial pain assessment card (MPAC) are now the most widely used instruments for the cancer pain assessment [14]. More sophisticated scales and pain questionaires are some-

times too difficult to administer to ill and weak cancer patients.

When the results of pain intensity estimates, measured by visual analogue scales, of 103 cancer patients were compared with estimations of pain intensity by their treating physicians, only 27% agreement existed for severe pain (VAS between 7 and 10), 29% for moderate pain (VAS between 3 and 6) and 70% for slight pain (VAS between 0 and 2) [15]. From other studies it is known, that patients rate their pain as being more severe than the estimation by their physicians [22]. While patients may rate their pain by comparison to prior experiences, physicians can only compare the pain behavior of their patients with the pain behavior of other patients seen by them before. In rating the pain behavior, other dimensions of pain experience are not taken into account, leading to disagreement between patient and physicians. These findings have to be kept in mind when assessing cancer pain and comparing research in this area.

The patient's personality in cancer pain

In contrast to other aspects, only a few studies exist on the link between personality and the cancer pain experience. Bond [3] studied three groups of patients with cervical cancer ($n=52$): pain-free patients and patients in pain who do not or do communicate their pain. He studied different aspects of personality such as neuroticism, defined as the degree of emotional overresponsivness, and extraversion, defined as the degree of being an outgoing personality with uninhibited social tendencies. As expected, he found the first group to show signs of low neuroticism high extroversion, the second group high neuroticism low extroversion and the third group high neuroticism high extroversion. It seems that patients in pain show a higher degree of neuroticism (emotionality) than patients without pain. Patients within the pain group and with a high degree of extroversion communicated their pain, while those with low extroversion did not. It seems, that the pain experience itself leads to an arousal of emotions and extroverted patients are more able to communicate their experiences. As a consequence the third group, patients in pain without the ability to communicate, received no analgesics from their nurses and behaved as non-complainers like the first group, but for different reasons.

In addition it is known that patients who are able to speak about their pain cope better: although their ratings of pain intensity may be the same, they rate their pain "bearable", while those who do not communicate rate their pain as exceeding the "bearable" value [9].

Cancer pain and affect

The influence of pain on affect and affect on pain intensity is well known from clinical experience. While acute pain is said to cause anxiety, chronic pain is associated with depression. In a recent study [22], 30 cancer patients and their physicians were asked about the relationship between affective states and cancer pain: about half of them believed that emotions significantly influenced cancer pain, but 58% of the patients and almost all of the physicians stated that cancer pain has a significant influence on emotions. This is similar to the results of other surveys [11]. It is not surprising that patients usually underestimate or deny a relationship between pain and affect, since emotions are still regarded in these circumstances as something negative and if they can influence pain intensity to a certain degree, it is felt that the pain is somehow unreal or imagined.

In a survey of cancer patients ($n=215$), the Psychosocial Collaborative Oncology Group [10] found that in patients with a psychiatric diagnosis, 39% rated their pain intensity above 5, while only 19% of the patients without psychiatric diagnosis rated their pain above 5. Half of these in- and outpatients of five cancer centers in North America received a psychiatric diagnosis, when assessed by a psychiatrist. The main diagnosis was adjustment disorders with anxious and depressed mood; 15% of patients in significant pain had symptoms of a major depression.

Ahles et al. [2] studied cancer patients with ($n=40$) and without pain ($n=37$); they were matched for diagnosis, stage of disease and age. The majority had metastatic disease, half of them had pain for more than 6 months and were in pain over 50% of the day. Using different observer and subjective psychological instruments, he found significantly more depressive symptoms in patients with pain, but not significant differences in symptoms of anxiety. Correlations between anxious and depressive symptoms and pain intensity have also been demonstrated by others, especially in patients without any pain-free episodes [29].

No conclusions can be drawn from these studies about the degree of influence of pain on affect and of affect on pain. From a clinical point of view, examples of both extremes are well known: affective states can be a product of untreated pain and pain can be caused by an underlying depressive or anxiety disorder. In most patients, the reality lies between these two extremes and the degree of influence is unknown. Cleeland [7] tried to address this issue: he assessed 120 cancer patients with moderate or severe pain; ⅓ had depressive symptoms. No statistically significant difference in the rating of their pain intensity was found between patients with and without depressive symptoms. When patients in the top third of the depression scale were compared with patients in the lower two-thirds, no significant differences in the rating of pain intensity was found. In addition, the degree of depressive symptoms was not a predictor of pain intensity in a 1-month follow-up survey. How important these findings may be for therapeutic strategies will be discussed later.

Different hypotheses about the association between pain and affect have been formulated. Among the most widely accepted is the hypothesis that during painful states, descending pain-modulating nervous pathways are stimulated, leading to a depletion of neurotransmitters (serotonin, noradrenaline) and to an "organic depression". On the other hand, during depressive states

with depletion of neurotransmitters, the pain-modulating pathways cannot be activated and pain intensity increases [12]. In that regard it is interesting that in depressive patients, pain is often felt in areas of prior injuries [4]. An anxious mood is believed to cause pain by sympathetic arousal, muscle tension, vasoconstriction and visceral disturbance; pain, on the other hand, may cause anxiety through the cognitive interpretation of the pain as a sign of impending death or rapid disease progression [27].

Cognition and cancer pain

There are different indications that cognition may be of importance in relation to cancer pain. In 1983 Spiegel and Bloom [25] published a prospective study involving 109 patients with advanced carcinoma of the breast. Pain intensity, pain frequency, medical, social and psychological variables were documented at intervals of 4 months for 1 year. Surprisingly, the medical variables, like sites of metastases, were not predictors for pain intensity, but analgesic intake, total mood score and the interpretation of pain (related or not related to disease progression) could predict 50% variability in the pain intensity.

In another study, the hypothesis, that cancer patients may perceive pain as being less severe if it was attributed to other medical problems than cancer, was not confirmed [21]. The authors attributed the failure of the hypothesis to the fact that patients were all in such an advanced state of disease that active coping mechanisms were replaced by passive cooperation. However, how important cognition must be in cancer pain is illustrated by the fact that cancer patients use up to two-thirds less morphine, when morphin is administered by a patient-controlled system [16]. Here again, the perception of the situation as being controlable seems to be the cognitive factor playing a decisive role in this process.

When cancer patients are matched with patients in chronic pain, and groups of similar pain intensity are formed, the mean affective scores of patients in the high-pain-intensity group are similar in both groups; cancer patients in the low-pain group have a higher affective score than chronic pain patients [19]. The interpretation of the pain experience seems to influence affect in these patients. This study is also a good illustration of the fact that somatic, cognitive and affective factors in cancer cannot be regarded as isolated, but do influence each other. It is also known that cancer pain influences different cognitive processes: 56% of cancer patients indicated that their pain had a negative influence on their concentration [29].

Cognitions and, more so, misconceptions of patients and treating physicians may influence cancer pain treatment in a variety of other ways: more than half of an interviewed sample of 496 healthy adult Wisconsin residents reported major concerns about taking narcotics for cancer pain; most of them were concerned about mental confusion, development of tolerance, addiction or other undesirable side-effects [18]. Studies on misconceptions leading to undertreatment of cancer pain among medical personnel indicate similar, but less alarming findings [6, 20] (Stiefel et al., manuscript in preparation).

Cognition, like the perception of pain relief, may also differ. Patients, indicating the same pain intensity can have a different perception of pain relief [9]. Perception of pain relief, on the other hand, may be more important in some patients than the pain intensity they experience. The author participated in one study that demonstrated no influence of pain intensity on suicical ideation in cancer patients, but a negative correlation between the perception of pain relief and suicical ideation [23]. We concluded that the perception of even minimal pain relief may give back a sense of control to a patient overwhelmed by the catastrophic situation of having cancer.

Behavioral and social aspects of cancer pain

Behavioral aspects of cancer pain are often used in clinical practice as indicators of pain intensity, though they are not reliable instruments to assess or measure cancer pain!

Most of the studies on behavior in cancer pain concentrate on the changes of activity levels associated with pain: in a survey, 55% of cancer patients indicated a significant interference of pain in their daily activity [11]; other studies confirmed that patients in pain are less active when compared to cancer patients without pain [2].

In the same way changes in social relations are associated with pain: the length of time of visits and of conversations decreases significantly if cancer patients are in pain [29]. The importance of these findings cannot be overestimated, since this is what the patients and their families feel most directly and what contributes to less distraction, satisfaction and well-being, thus leading to a higher pain intensity and a vicious circle. Unfortunately studies investigating these aspects of cancer pain are rare.

Implications for therapeutic strategies

Assessment

Assessment is crucial for the treatment of cancer pain. There is now a wider agreement than decades ago that the patient is the best judge of cancer pain intensity. Visual analogue scales may be of help in controlling treatment success, but there may be still patients who do not express their pain because of their personality structure or cognitions like fear of side-effects from narcotics. This has to be taken into account when treating cancer patients' pain. Proper assessment includes an assessment of the patient's feelings, thoughts and beliefs, followed by information understandable to the patient.

If, in some patients, it is felt that their cancer pain is influenced by psychosocial factors, a psychiatrist or psy-

chologist may be of great help in assessing the patient and treating him accordingly. Unfortunately there are still clinicans, who believe that cancer pain, which is influenced to a considerable extent by psychosocial factors, is unreal or imagined. A discussion of the definition of pain adapted by the International Association for the Study of Pain may be of help in these situations.

Personality

The experience and expression of pain are not independent from the cancer patient's pesonality. So-called noncomplainers with a limited possibility of pain expression and a high degree of introversion may not receive adequate analgesic therapy [3]. Assessment of pain intensity in these patients cannot be limited to the overt behavioral aspects of pain. To help the patient express the pain experience, can itself be therapeutic in that expression of pain seems to diminish pain intensity [9]; the same is known for painful psychological states like suicical ideation [26]. Most of the time the establishment of a secure relationship, where the patient is encouraged to express negative thoughts, feelings and complaints is sufficiently helpful to realize these goals. On the other hand, the impact of unrelieved pain upon the appearence of the personality cannot be overestimated: introverted, bitter and hostile patients may become open, warm and sympathetic once analgesic therapy is adequate. Physicians should therefore not judge too quickly the personality of a patient to be the main reason for inadequate pain relief [5]. As in the following, pain management has to be directed to the whole person, to all of the dimensions of cancer pain regrardless of what impact these dimensions may have on the experience of pain.

Affect

The relationship between affect and pain is probably the most visible to patients and physicians; unfortunately there is considerable understanding of the influence of pain on affect, but somehow shame and disregard for the reverse relationship [11, 22]. From the research presented, we know about the significant interrelationship between pain and emotions. This interrelationship may be mediated through cognitive processes, like the meaning of pain, or exist as a concomitant process or as a consequence of neurotransmitter change. Whatever, the mechanism, affective changes have to be treated regardless of their origin as a part of pain management. The clinical picture of the affective changes will influence treatment decisions. Minor symptoms of anxiety and depression have a variety of causes: a reaction to the stress caused by the cancer and its treatment, a consequence of misperceptions, phantasies and distorted thoughts, a side-effect of neuroleptics, corticosteroids and narcotics, or other origins. Depending on the assessment, the etiology of symptoms will require supportive or cognitive psychotherapy, relaxation, psychotropic drugs or other interventions such as hypnosis, music therapy and somatic treatments. If signs of major depression are detectable, like hopelessness, helplessness, depressed mood and persistant suicidial ideation, psychotropic drug treatment will become necessary in addition to other interventions. It is known, that in the oncology setting, there is clearly undertreatment in regard to the use of psychotropic drugs such as antidepressants [28].

In order to deal effectively with cancer pain patients, it is helpful to integrate a psychiatrist or psychologist into the professional team responsible for treatment.

Cognition

Cognitions like beliefs, attitudes and expectations, are influenced by the pain experience and have an impact on the pain intensity of cancer patients. Some of these cognitions may be realistic, others are misconceptions or dysfunctional cognitions. In order to assess these cognitions, the patient has to be questioned: what does he or she think is causing the cancer and the pain? What are his or her expectations in regard to the medications, the future course of the illness or the physicians? Unrealistic cognitions can often be changed by simple communication from the "expert" to the "layman" and beliefs can be reoriented: pain is not always an overwhelming experience, not every new sensation is an indication of disease progression and the physicians are not giving up. For more sophisticated strategies in cognitive therapy, a skilled psychiatrist or psychologist can be of help [13]. However, a lot of very simple interventions can be made by assessing the patient and responding to his or her misconceptions. These interventions have an impact on the patients thoughts, the experienced pain intensity, and his or her affects and behavior.

Behavior

Behaviors may be a response to cancer pain (so-called respondent behavior, like moaning) or they may exist in order to avoid cancer pain (so called operant behavior, like limping). Most of the research presented addresses behavior-like activity that is a combination of these two forms of behavior. A given behavior may be a necessary consequence of inadequate pain management, it can also be a non-verbal form of communication or become a habit. In the second case, if these behaviors are used as communication or have become a habit, they may be damaging to the patient and influence the behavior of other people. Pain may then become the only form of expression of unverbalized feelings such as anger or depression, or become a behavior that is independent of the pain experience and therefore counterproductive. Assessment of the patient includes observation outside the daily rounds and asking the nurses or significant others about how the patient's day is spent and how he or she interacts with them.

Behavioral interventions are directed at modifying target behaviors using techniques such as relaxation, hypnosis and biofeedback. These techniques can be effective by reducing muscle tension, giving back a sense of personal control or teaching the patient how to distract him- or herself from focusing on the disease. For

further discussion of the role of these techniques, see Ahles [1] or Cleeland [8].

Social activities

The relationship between social activities and cancer pain has only been examined in regard to the impact of pain on factors such as the time spent with family members. As discussed for other aspects above, there is also the reverse relationship, where social activities may diminish pain intensity through their influence on cognition or affect. From a clinical point of view it is well known that pain seems to be most unbearable in loneliness or during sleepless nights. The hospital environment is often not a milieu to facilitate social activities. In our palliative care unit in St. Gallen [24], we have tried to overcome these difficulties by creating in the unit a community room, a TV corner and a kitchen, where patients and their significant others can meet and cook without being constantly reminded that they are in a hospital and ill. In addition, family members are encouraged to sleep in the patient's room whenever this seems desirable. Another room is reserved for music therapy or for patients and visitors who need a quiet and private place. Virtually no data exist on what patients expect from the hospital nor what influence such structures may have to facilitate social activities and indirectly change behavior, cognition, affect and cancer pain. From our clinical work we certainly feel the importance of these facilities.

Conclusions

A considerable body of knowledge exists to support the hypothesis of a multidimensional model of cancer pain, where affect, cognition, behavior and social aspects influence each other, have an impact on pain intensity and are influenced by the pain. To what degree these dimensions exercise their influence is different from patient to patient and may change over the course of the disease.

Whatever the degree of influence between the different aspects of pain may be, a cancer patient is best treated when none of these aspects is neglected in the assessment and all are taken care of in the treatment. For effective therapeutic strategies, a multidisciplinary team with a psychiatrist as one of the team members is often best fitted to fulfill this task.

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