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Pain and smoking among cancer patients: the relationship is complex but the clinical implication is clear

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Pain is a common and debilitating complication of cancer and its treatments. Recent studies have reported higher pain severity among persistent smokers with lung or head and neck cancers. Daniel et al found that persistent smokers after a lung cancer diagnosis were 1.6 times more likely to report moderate or severe pain compared with never and former smokers after controlling for age, education, health status, and other cancer symptoms, such as dyspnea, fatigue, and difficulty eating (4). Logan et al found that current smokers with head and neck cancer reported higher general pain and pain-related interference than did never and former smokers, even after controlling for stage of diagnosis (8). The authors of these cross-sectional studies called for further research to explore this association of pain and smoking among patients with other cancers and to determine the directionality of this relationship. The next question facing researchers is whether smoking increases pain or whether pain causes more smoking.

In the current issue of *Pain*, Ditre and colleagues (6) utilized a cross-sectional design to assess the association of pain and smoking status for a variety of cancer diagnoses including breast (35%), lung (33%), bladder (6%), ovarian (6%), colon (4%) and other less common types. The authors hypothesized that current smoking would be associated with higher pain across all cancer diagnoses. Participants in the study (n=224) were cancer patients about to begin out-patient chemotherapy. The mean age was 56, 63% were female and 88% were white. Because subjects were recruited for an exercise intervention designed to improve chemotherapy side effects, the study excluded patients who were unable to participate in moderate exercise. The authors found that persistent smokers reported more severe pain than never smokers and this association did not differ by cancer type. Persistent smokers also reported greater interference from pain than former smokers or never smokers. Among former smokers, an inverse relationship between pain severity and number of years since quitting was observed suggesting that quitting smoking may lead to reduced pain over time.

The limitations of the cross-sectional study by Ditre et al are well described by the authors and include the inability to determine causality and the use of self-reported smoking status, which was not confirmed by biochemical verification (6). As there is considerable pressure for patients with cancer to say that they are no longer smoking, self-reported smoking status can introduce bias. Furthermore, because patients with poor functional status (those unable

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to participate in moderate exercise) were excluded, the generalizability of these findings to all patients with cancer is limited. The finding that smokers were less likely to have had surgery compared with never and former smokers raises concerns about whether smokers are more likely to be diagnosed with inoperable cancers or less likely to agree to surgical procedures. The major strength of this study is the diverse types of cancer and stage of disease.

Although associations with pain and smoking among cancer patients are modest, they still have public health significance. There are multiple studies that demonstrate the analgesic properties of nicotine (likely from effects at both central and peripheral nicotine acetylcholine receptors) (1,9). Yet, nicotine has also been observed to function as a risk factor for the development of chronic painful conditions, such as back pain (9). There is limited understanding of the effects of nicotine on cancer pain which is often multi-factorial. Understanding modifiable factors associated with cancer pain provides opportunities to prevent and treat pain. Ditte and Brandon (2008) conceptualized a positive feedback loop where smokers may be motivated to use tobacco as a means of coping with pain, leading to greater pain, increased tobacco use, and worsening nicotine dependence (5).

Clinicians must do more to assist cancer patients to quit smoking after their diagnosis. Most studies have found that cancer patients report quitting “cold turkey” and in one study of patients recovering from lung cancer surgery only 6% received combined treatment with counseling and medication (2). Nicotine addiction is a key factor in maintenance of cigarette smoking among cancer patients (3). Although this addiction is difficult to overcome and this habit is hard to change, supportive counseling in conjunction with pharmacotherapy is effective in promoting cessation among cancer patients (7). If pain increases the urge to smoke, a formal smoking cessation program for cancer patients should also include efforts to control pain severity (8).

Although more research is needed to understand the mechanisms that relate nicotine to pain, physicians should aggressively promote smoking cessation among cancer patients. Preliminary findings suggest that smoking cessation will improve the overall treatment response and quality of life. The next step is to conduct prospective longitudinal studies that clarify the issue of directionality, demonstrate no harm, and determine the impact of smoking cessation on pain severity among cancer patients.

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