Obesity and chronic pain: opportunities for better patient care

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“Weight reduction may help to relieve pain associated with obesity and improve patients’ quality of life.”

Growing evidence suggests that the relationship between obesity and chronic pain is not random. Understanding this relationship can contribute to effectively managing both conditions. We will examine the specifics of both pain management techniques for obese patients and novel interventional approaches for weight reduction in obese individuals. We suggest that the infrastructure for the treatment of chronic pain and obesity is already present in pain medicine, and includes medications, physical and psychological rehabilitation, and interventional management.

Epidemiology & mechanisms of pain

Obesity, defined by the WHO as a BMI of >30, affects more than half a billion individuals worldwide, and being overweight, defined as having a BMI of 25–29.9, affects almost three-times more adults [1,2]. Obesity is associated with cardiovascular disease, hypertension and diabetes, and, according to the WHO, millions of people die annually as a result of it. Furthermore, a significant portion of healthcare spending is allocated to the treatment of obesity co-morbidities. Impaired health-related

quality of life, social stigma, mood changes and chronic pain are other well-recognized problems related to obesity.

The relationship between obesity and chronic pain has been the focus of attention since the end of the last century. Recent studies have suggested a strong association between the two. In one study almost four out of ten obese individuals reported chronic pain, and 90% of them suffered from moderate-to-severe pain [3]. A survey of more than 1 million people demonstrated that individuals with BMIs 25–29.9 had about 1/5 more pain compared with normal-weight people, those whose BMIs were 30–34 reported about 68% more pain, those with BMIs of 35–39 had 136% more pain and those whose BMIs were more than 40 reported 254% more pain [4].

Chronic pain compounds the already enormous clinical, psychological, societal and economical burdens of obesity. The nature of the chronic pain–obesity relationship is multifaceted, and includes the interfaces of cultural, social, behavioral, environmental, biomechanical, metabolic and genetic factors [5].

KEYWORDS

- back pain • chronic pain
- fibromyalgia • headache • morbid obesity • obesity • osteoarthritis
- overweight • pain

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Simultaneous management of obesity & chronic pain: is that possible?

• Sharing of rehabilitation strategies

Lifestyle reformation is considered to be a fundamental instrument in effective rehabilitation of obese individuals. The same strategy is applied to a multitude of chronic pain states. Patient education, behavior modification, an increased level of physical activity, including specific exercises, are common tools for both obesity and pain management. Alternative treatment strategies may include acupuncture, chiropractic or osteopathic interventions, or other [6,7].

• Crossroads in pharmacotherapy

Pharmacotherapy of obesity has been increasingly popular [8,9]. The drugs approved for the treatment of obesity are typically quite expensive and are generally not supported by most formularies: the weight reduction is generally modest, and there are concerns about their safety [10]. In addition, data regarding the effects of these medications on chronic pain are very limited.

Obesity significantly alters drug absorption, binding, distribution and elimination through a variety of physiologic and pathophysiologic mechanisms. Such commonly occurring deviations, which could have a profound effect on medications prescribed for chronic pain, may be initially undetected but ultimately dangerous [11]. Some medications, such as gabapentin or pregabalin, commonly used in pain management, are associated with weight gain. Some others, such as topiramate or zonisamide, may actually help to reduce weight. Since obesity and dependency share some mechanisms, chronic opioid therapy for obese patients who have non-cancer pain probably should be discouraged, especially in high doses [12].

• Specifics of pain management interventions for obese individuals

Acute radicular pain, commonly encountered in obese individuals, is frequently treated using epidural injections. However, the procedure can be challenging in these individuals in terms of both access to, and visualization of, injection targets. The imaging technique used for interventional procedures must ensure adequate views during the procedure to see the target structure because the anatomy of the epidural space differs in obese and normal-weight patients [13]. Similar challenges were illustrated when ultrasonography was used for lumbar medial branch blocks and

facet injections in obese individuals [14,15]. Thus, special modifications are required for some commonly performed nerve blocks in these patients [16].

Obese patients commonly have diabetes mellitus or records of rapid weight gain associated with corticosteroid use. Therefore, corticosteroids should be used with a great caution. There are now newer treatment options, such as autologous conditioned plasma, platelet rich plasma and others, which may incite tissue regeneration in obese individuals [17]. Novel biologic strategies, including gene therapy and stem cell treatments, that target impaired intervertebral discs are being explored [18]. Pain management physicians are equipped with the knowledge and technology of delivering the newer agents to the targeted structures in obese individuals. In addition, newer, implantable devices have become available for treating obesity [19].

• Neuromodulation for obesity management

In contrast to quite invasive deep brain stimulation for the treatment of obesity, an atlanto-axial stimulation is reported to be a less aggressive technique. It probably delivers its weight reduction effect through the neuromodulation of structures which are anatomically close to the brainstem, cervical nerve roots, reticular formation, hypothalamus and vagal nerve elements [19]. The vagal nerve blockade was found to be safe and more clinically effective than a placebo intervention, in more than 200 obese patients [20]. The US FDA recently approved vagal blocking therapy, delivered via an implanted system, for the treatment of morbid obesity in adult patients.

• Bariatric surgery & chronic pain management

Despite bariatric surgery having a verified, mortality benefit for morbid obesity, the effect of the surgery on chronic pain is not universally positive [21]. The abiding complications of this surgery include a multitude of vitamin deficiencies, and a variety of hematologic and neurologic complications. The chronic neuropathic pain, small fiber neuropathy, radiculopathy and variety of psychiatric complications, most commonly depression, are not unusual. A vast majority of chronic opioid users continued using them after bariatric surgery, and, according to recent studies, also tend to use more opioids [22]. Pain

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management specialists are well equipped to identify and treat these problems. It is important to note, however, that collaboration with other providers while treating these complex patients is a major part of clinical success [23].

Infrastructure for obesity treatment within the scope of pain medicine

In general, the apparatus required for weight reduction already exists in the realm of pain medicine: most pain management clinics adopted the comprehensive chronic pain rehabilitation strategies, including physical rehabilitation, psychological therapies, medications and interventions. Adoption of relevant monitoring tools, and further training will be needed [23]. Weight reduction may help to relieve pain associated with obesity

and improve patients' quality of life. Further research should focus on comparing existing, and developing new, evidence-based strategies for the treatment of these complex patients, and exploring the advantages of simultaneously managing obesity and chronic pain.

Financial & competing interests disclosure

The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

No writing assistance was utilized in the production of this manuscript.

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