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Polypharmacy and Symptoms of Pain in Women with Fibromyalgia

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Abstract

Fibromyalgia (FMS) is a syndrome characterized by chronic widespread pain (CWP), which has no known etiology, and coincides with other life-altering symptoms including fatigue, mood disturbances, non-restorative sleep, and muscular stiffness. Despite the multiple medication classes that are typically used for the treatment of FMS, there are no known studies assessing the efficacy of polypharmacy on symptoms of pain in this patient population. While analgesic medications, including opioid or opioid-like medications, are commonly prescribed, the use of these medications for FMS has not been fully described, including the potential incidence of analgesic overuse. The primary purpose of this secondary analysis was to examine how many classes of pharmacologic agents were used in a sample of $N=122$ women diagnosed with FMS, the relationships between baseline pain levels and medication use, controlling for self-reported levels of fatigue and depression. Data was collected from two separate studies: (a) a cross-sectional study to examine the relationship among stress, symptoms and immune markers in women ($N=50$) with FM and (b) an RCT to examine the effect of a 10-week guided imagery intervention on stress, self-efficacy, symptoms and immunity in women ($N=72$) with FM. In both studies participants were asked to provide lists of currently prescribed medications for treatment of their FMS-related symptoms and complaints. Study outcomes revealed that participants were prescribed 6 different classes of medications. These included opioids, non-opioid analgesics, antidepressants, anticonvulsants, muscle relaxants, and benzodiazepines. Baseline pain severity ($p=0.0106$) and pain interference ($p=0.0002$) were significantly associated with opioid use as compared to those individuals who did not report opioid use. Study findings are considered preliminary data for development of a larger study to examine efficacy of polypharmacy, with and without opioids, for this chronic pain patient population and the related potential risk of adverse effects and substance abuse.

Introduction

The primary goal of this research project was to examine the relationships between pain levels and medication use in women diagnosed with fibromyalgia. The project is a secondary analysis of previously collected data from two studies conducted by Victoria Menzies, PhD, RN. The data utilized for this project was self-reported baseline pain level scores (Brief Pain Inventory [BPI], Cleeland, 1989) and self-reported medication usage from a sample ($N=122$) of women with FM. Through examination of this data, we were able to answer the following proposed research questions: (1) "How many different classes of analgesic agents were used for individuals with FM?" and (2) "Do baseline pain scores differ in those individuals prescribed opioid medications compared to those who do not report opioid use?"

Results/Discussion

Table 1. Drug Use by Broad Categories in a Sample of $N=122$ Women with FM

Categories	% (n)
Opioids	30% (37)
Non-Opioid Analgesics	50% (61)
Antidepressants	58% (71)
Anticonvulsants	31% (38)
Muscle Relaxants	41% (50)
Benzodiazepines	24% (29)
Any Non-Opioid Pain Med Use	87% (106)

Table 2. Scale Scores by Opioid Use

Scale	Total (n=122)	Opioid Use No (n=85)	Opioid Use Yes (n=37)	p-value
BPI Severity	5.39 (2.01)	5.09 (1.97)	6.10 (1.95)	0.0106 ¹
BPI Interference	5.69 (2.54)	5.12 (2.44)	6.97 (2.29)	0.0002 ¹

The BPI Scores Range from 0 (no pain) to 10 (worst pain)
(Mild Pain 1 - 4; Moderate Pain 5 - 6; Severe Pain 7 - 10)

Study findings demonstrated that those participants who were taking opioid medications reported higher levels of baseline pain scores than those who were not taking opioids. Baseline pain severity ($p=0.0106$) and pain interference ($p=0.0002$) scores were significantly associated with opioid use as compared to those individuals who did not report opioid use.

Pharmacologic interventions are predicated on the current best understanding of FMS as a centralized pain condition (Claw, 2014). Central pain conditions are those in which persistent pain occurs as result of abnormal alterations of central ascending and descending pain pathways, the outcome of which is augmented central nervous system pain processing. That is, pain persists in the absence of anatomic anomalies and without there being any proof of nociceptive input from the peripheral nervous system (Üçeyler et al., 2013; Claw & McCarberg, 2012). Just as there is lack of objective evidence for nociceptive signaling from the peripheral nervous system, medications commonly used to treat peripheral pain, such as opioids, may be ineffective for symptom reduction in FMS.

Conclusion

Further examination of pain management strategies is warranted in this patient population, especially where potentially negative effects of polypharmacy are considered.

Researchers have suggested that hyporeactivity of the hypothalamus-pituitary-adrenal (HPA) axis, increased inflammatory processes, and/or dysfunction of neurotransmitters in the brain (dopamine, serotonin, norepinephrine, glutamate, substance P) are likely associated with this centralized pain state in FMS. Therefore, medication management appears to be most often approached within the context of neurotransmitters and their role in analgesic activity. For example, pain relieving effects of anticonvulsants have been attributed to reduced release of several pain pathway neurotransmitters, particularly glutamate and substance P, both of which play a facilitory role in pain processing (Mease, Dundon, & Sarzi-Puttini, 2011; Üçeyler et al., 2013). Other neurotransmitters, considered to contribute to inhibition of pain processing, are norepinephrine, serotonin and gamma-aminobutyric acid (GABA) (Claw, 2014; Claw & McCarberg, 2012).

Therefore it is recommended that future longitudinal studies should include an examination of those medications which effect modulating and inhibitory neurotransmitters and examine them in relation to pain and other symptoms of fibromyalgia.

Select References

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