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Review

Prescribing opioids in older people

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ABSTRACT

People are living to older age. Demographic pressures are driving change. Opiate analgesics are the most powerful known pain relievers. Persistent pain, both cancer and non-cancer types is frequent in older adults. The use of opioid analgesics is appropriate in the treatment of moderate to severe persistent pain. The challenge of prescribing opioids in older adults is to understand the factors involved in making appropriate choices and monitoring the beneficial effects of pain relief while managing the side-effects. This article will review the current concepts, evidence and controversies surrounding opiate use in the elderly. An approach is outlined which involves: pain assessment, screening for substance abuse potential, deciding whether you are able to treat your patient without help, starting treatment, monitoring effectiveness of pain control and managing opioid-associated side-effects. The goal of pain management using opioids is the attainment of improved function and quality of life.

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1. Introduction

This article is a focused review of the topic of prescribing opioids in older adults. We will highlight the current concepts, evidence and areas of uncertainty. This article is targeted to clinicians who are navigating therapeutic options for older adults, a significant number of whom are becoming vulnerable and frail. The objectives are to provide the reader with information about the effectiveness, side-effects and appropriateness of prescribing opioid analgesics for their older adults with the goal of improving the function and quality of life of those individuals.

2. The challenges of prescribing in older adults

People are living to older age. In late 2011, the world population reached 7 billion. As estimated by the World Health Organization in 2009, based on the reports of its 193 member states, this population had a median age of 29 years, with 11% of people currently older than 60 years. Older adults are also the fastest growing segment of the global population. This demographic pressure is driving different health care needs and exposing new issues.

There are several challenges when prescribing in older adults. The first challenge is the presence of physiologic changes related to normal aging that mimic or amplify medication side effects. Dizziness symptoms and constipation is common. Bowel and bladder function is compromised by pelvic floor muscle laxity. Renal and hepatic function declines. However decline in cognitive functioning is not a universal phenomenon. The second challenge is older patients frequently have multiple co-morbidities such as heart disease, hypertension, diabetes, arthritis, stroke, hypothyroidism, prostatic hypertrophy, and dementia [1,2]. This burden of co-morbidities may also impact on an older patient's response to medications. Patients studied in a variety of settings (hospitalized, emergency department, nursing homes, community-dwelling) may represent heterogeneous cohorts because of different burdens of co-morbidities and limits the findings to those groups. Past clinical trials have routinely excluded older adults, especially those 80 years and older with multiple co-morbidities. The lack of rigorous studies into the effects of therapeutics in this important segment of the population has led to the emergence of organizations such as PREDICT (http://www.predicteu.org) and the drafting of the European Charter for Older People in Clinical Trials [3,4]. The third challenge is represented by polypharmacy. Older adults use more medications because of the co-existence of multiple diseases [5]. Polypharmacy as defined by the use of four or more medications, is highly prevalent in this population [6]. Even though the multiple medications a patient is taking may be deemed appropriate this polypharmacy is often the cause of iatrogenic complications if not managed properly. Elderly patients who visit multiple prescribing physicians and fill their prescriptions at multiple pharmacies also increase their risk of polypharmacy and of inappropriate and undesirable prescribing [7].

3. Methods

This review is based on high quality articles chosen from the results of targeted searches using the OvidSP search engine (Wolters Kluwer, P.O. Box 1030, 2400 BA, Alphen aan den Rijn, the Netherlands) for literature published between 2000 and 2012 accessing the MEDLINE and EMBASE bibliographic databases, the Cochrane Library (http://www.thecochranelibrary.com) and citations from key articles.

3.1. Opioid analgesics

Opioids are the most powerful known pain relievers. Evidence of their use and abuse date back to antiquity and history is filled with conflict and crime related to the narcotics industry. Opioid analgesics are among one of the most frequently prescribed drugs. In the United States, the combination medication hydrocodone/acetaminophen is the number one individual dispensed prescription medication during 2007–2011 while the class of narcotic analgesics is overall ranked third [8,9]. Global sales in 2011 of prescribed opioid analgesics was 12.3 billion US dollars, ranked fifteenth [10]. The rise in opioid prescribing is a concern in many countries, with reports coming from Australia [11] the United States [12] and Norway [13] as examples. However the "prescription opioid crisis" [14] should be considered an appropriate reality once it is understood that opioid prescribing must increase to respond to the clinical needs of more older patients who require effective relief from their moderate to severe persistent pain. The following sections present factors that should be considered when prescribing opioids in older adults so evidence-informed decisions can be made to provide the best care.

3.2. Pharmacology of opioids in older adults

The effect of normal aging on the pharmacokinetic and pharmacodynamic properties of drugs is well described [15–19].

Changes in body composition, such as a reduction in total body water, a decrease in total body mass and an increase in body fat results in an increase in the volume of distribution for liposoluble medications (e.g. antipsychotics and antidepressants) and a lower volume of distribution for water soluble drugs such as morphine. Malnutrition and sarcopenia are states that can lower serum albumen concentration which can increase the free fraction of drugs which are highly protein-bound (e.g. phenytoin, valproic acid) which then leads to potentially increased side effects.

Reduced hepatic function due to a reduced hepatic mass and blood flow can increase the bioavailability of drugs such as morphine which undergo a high first-pass extraction. Reduced levels of hepatic monooxygenases and cytochromes can result in a 30–40% reduction of hepatic drug clearance.

A reduction in renal function due to the decline in kidney mass, renal blood flow, glomerular filtration rate and tubular secretion rate is universal. However an accompanying decrease in creatinine production due to a reduction in muscle mass may offset these changes and lead to an apparent preservation in plasma creatinine measurement. An estimation of the creatinine clearance or actual measurement by inulin clearance analysis is needed to guide clinicians in dosage adjustments for drugs that are cleared by the kidneys.

Individual variability due to genetics, lifelong living habits and the environment can result in significant heterogeneity in the response to drugs in elderly patients.

3.3. Pharmacokinetics of opioids

Table 1 lists the comparative duration of action of opioid drugs and their different formulations. Table 2 lists the comparative