Best Practice & Research Clinical Anaesthesiology 25 (2011) 367–378

Contents lists available at ScienceDirect

Best Practice & Research Clinical Anaesthesiology

journal homepage: www.elsevier.com/locate/bean

5

Advances in analgesia in the older patient

Julia C. Coldrey, MBBS(Hons), DCH(SA), FANZCA, Consultant Anaesthetist, Senior Lecturer [a,b], Richard N. Upton, BSc, PhD, Professor of Pharmacometrics [c], Pamela E. Macintyre, BMedSc, MBBS, MHA, FANZCA, FFPMANZCA, Director, Acute Pain Service [a,b,*]

[a] Department of Anaesthesia, Pain Medicine and Hyperbaric Medicine, Royal Adelaide Hospital, South Australia 5000, Australia
[b] Discipline of Acute Care Medicine, University of Adelaide, Adelaide, South Australia 5000, Australia
[c] School of Pharmacy and Medical Sciences, University of South Australia, Adelaide, South Australia 5000, Australia

Keywords:
postoperative pain
ageing
aged
frail elderly
analgesics
opioid analgesics
non-opioid analgesics

The average age of the world's population is increasing rapidly, with those over 80 years of age the fastest growing subsection of older persons. Consequently, a higher proportion of those presenting for surgery in the future will be older, including greater numbers aged over 100 years. Management of postoperative pain in these patients can be complicated by factors such as age and disease-related changes in physiology, and disease-drug and drug–drug interactions. There are also variations in pain perception and ways in which pain should be assessed, including in patients with cognitive impairment. Alterations in pharmacokinetics and pharmacodynamics may influence drugs and techniques used for pain relief. The evidence-base for postoperative pain management in the older population remains limited. However, most commonly used analgesic regimens are suitable for older patients if adapted and titrated appropriately.

* Corresponding author. Department of Anaesthesia, Pain Medicine and Hyperbaric Medicine, Royal Adelaide Hospital, South Australia 5000, Australia. Tel.: +61 8 8222 5472; Fax +61 8 8222 5887.
E-mail addresses: jcoldrey@mac.com (J.C. Coldrey), richard.upton@unisa.edu.au (R.N. Upton), pamela.macintyre@adelaide.edu.au (P.E. Macintyre).

1521-6896/$ – see front matter Crown Copyright © 2011 Published by Elsevier Ltd. All rights reserved.
doi:10.1016/j.bpa.2011.06.003

Introduction

The average age of the world's population is increasing. Changes to date and those predicted to occur by 2050 have been summarised by the United Nations.[1] The proportion of 'older' persons (aged 60 years and over; also referred to as elderly[2]) worldwide was 8% in 1950, 11% in 2009, and excepted to reach 22% by 2050. In the developed world, over 20% of the population is already in the older group; this is projected to reach nearly a third by 2050. The fastest growing subsection is the 'oldest-old' (aged 80 years or more), which comprised one in seven older people and 1.5% of total world population in 2009. This is likely to increase to one in five and 4.5% by 2050, when the number aged over 100 may reach 4.1 million – a ten-fold increase from 2009.

There are likely to be economic and social effects resulting from this rapid 'greying' of the population. It also means that a much higher proportion of patients presenting for surgery will be older, including greater numbers in the over-80 and over-100 year old age groups.

Management of postoperative pain in older patients may be complicated by a number of factors including a higher risk of age and disease-related changes in physiology and disease-drug and drug–drug interactions. Differences that need to be considered in older persons include possible alterations in perception of pain; ways in which pain is assessed, including in those with cognitive impairment; variations in physiology and potential pharmacokinetic and/or pharmacodynamic consequences in relation to drugs used for pain relief; and the various analgesic techniques that may be employed in the postoperative setting.

The evidence-base for pain management in the older population remains limited, particularly for the oldest-old and frail. In part this is because older patients, especially those with significant medical comorbidities or taking particular medications or with cognitive impairment, are often routinely excluded from studies.[3,4] As the average 70 year old living in the community may have over three medical comorbidities and take seven different medications, there is a need for better evidence specific to this patient group.[3]

This review will look at postoperative analgesia in older and oldest-old patients. However, it is recognised that it may be biological rather than chronological age that has the most effect on any differences. Most study designs do not yet allow for these distinctions and groupings remain based on chronological age.[2]

Effectiveness of acute pain management in older patients

In general, pain is not managed well in older persons.[3,5] Repeated studies have also shown that postoperative pain is poorly controlled in a large proportion of patients of all ages[6,7] and in older patients specifically.[8] Those with dementia are particularly likely to have their pain under-treated.[5] In patients recovering from hip fracture surgery, those with dementia received significantly less opioid than their cognitively intact counterparts of the same age,[9–11] even though the pain experienced by older persons with and without dementia may not differ.[12]

Poor postoperative outcomes are more common in older patients[2] – age greater than 80 years correlates with higher rates of morbidity and mortality after elective and emergency surgery.[13–15] Frailty, measured using validated scales, is more common in the older patient and also increases risk of poor outcomes.[16,17]

Evidence that better pain relief reduces postoperative complication rates remains limited[18] – see later. However, inadequate analgesia can affect general wellbeing. Higher postoperative pain scores have been associated with lower health-related quality of life, prolonged decline in physical and social function, depressed mood, and disrupted sleep patterns.[7] Pain can also adversely affect cognition (see below).

Age-related differences in pain perception

Age-related differences in the neurophysiology of nociception and perception of pain have been reviewed in detail by Gibson and colleagues.[19–21] In general, ageing results in significant structural, functional and neurochemical changes in both the central and peripheral nervous systems. These differences may alter nociceptive processing, including impairment of descending endogenous pain