How to ensure acute pain in older people is appropriately assessed and managed

Older people often need pain relief yet age related changes can influence drug pharmacokinetics. An awareness of both drug and non-drug interventions is vital.

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The increasing ageing population and the common occurrence of acute and chronic pain in this group means that nurses are likely to come into contact with many older patients who need pain management. This article examines the assessment of acute pain in older people, as well as different approaches to and challenges in pain management.

INTRODUCTION

Pain management is likely to become increasingly important given the expected rise in the number of older people. In 2005, more than 11 million people in the UK were of pensionable age, and this is expected to rise to 15.3 million by 2031 (Age Concern, 2007).

Pain is a common problem for older people as they may suffer from long term conditions, such as degenerative joints, osteoarthritis, leg ulcers and many others; it is also under recognised and undertreated in the older population. Some authors suggest that altered physiology of peripheral and central pain mechanisms, combined with psychological attitudes, such as stoicism and reluctance to report pain, are key factors (Schofield, 2007).

The body responds to pain in many adverse ways (Box 1). This means accurate pain assessment and management is vital for high quality patient care.

PAIN ASSESSMENT

The assessment of pain is a vital prerequisite for achieving effective pain management. There are various reliable assessment tools. In adults, the three most common are:

- The visual analogue scale (VAS);
- The verbal numerical rating scale (VNRS);
- The categorical rating scale.

The VAS has “no pain” at one end and “worst pain” at the other (Fig 1). Patients mark the point that best represents their pain. This method can be confusing, especially for older people who may have visual impairment. The VNRS is similar to the VAS. Patients are asked to give a number that best represents their pain on a scale between 0 (no pain) and 10 (worst pain) (Fig 2). They may still have difficulty rating their pain as a number.

The categorical rating scale uses different words, such as “none”, “mild”, “moderate”, “severe”, to rate pain. This can be used in combination with the VNRS. For example, patients can be asked to describe their pain as “none (0)”, “mild (1)”, “moderate (2)” or “severe (3)”. It is important to note that severity is only one aspect of pain assessment.

PEOPLE WITH COGNITIVE IMPAIRMENT OR DEMENTIA

Those with dementia or more than mild cognitive impairment may find it difficult to articulate their pain. Barriers to effective pain assessment in these groups include misdiagnosis or late diagnosis, and lack of recognition of pain, appropriate assessment tools, and education and training (McAuliffe et al, 2009). Several strategies have been suggested to address these issues:

- Getting to know the person;
- Involving friends, family and carers;
- Education and training;
- Use of adequate assessment tools (McAuliffe et al, 2009).

When working with people with dementia and cognitive impairment, nurses also need to make an observational assessment of pain behaviour. Tools such as the Abbey Pain Scale (Abbey et al, 2004) and Pain Assessment in Advanced Dementia (PAINAD) help practitioners assess pain by observing behavioural indicators such as:

- Facial expressions (frowning, grimacing);
- Vocalisation (crying, groaning);
- Respiratory: if patients are unable to cough or take deep breaths due to pain, their recovery rate is significantly reduced. They also have an increased risk of developing chest infections, hypoxia and possible respiratory failure.
- Cardiovascular: the increased sympathetic chain activity in response to pain causes an increase in hormonal activity which, in turn, produces an increase in blood pressure. Tachycardia also occurs, which can lead to a degree of myocardial ischaemia, especially in people with pre-existing cardiovascular disease. Those who are reluctant or unable to mobilise because of pain are at increased risk of developing deep vein thrombosis and/or pressure ulcers.
- Gastrointestinal: pain can lead to delayed gastric emptying and reduced intestinal motility, resulting in nausea, vomiting and constipation.
- Endocrine: pain leads to the stress response caused by the release of a number of hormones. For example, release of cortisol causes hyperglycaemia, which can lead to immunosuppression and delayed wound healing.
- Psychological: pain can lead to anxiety, depression, worry, sleep deprivation and mistrust of healthcare professionals.

PRACTICE POINTS

- Adequate pain relief is necessary to avoid further medical complications;
- Appropriate pain assessment is an essential part of pain management;
- Consider multimodal analgesia but also use non-pharmacological techniques;
- Analgesia in older patients must be prescribed and administered with caution due to an increased risk of side effects.

BOX 1. PHYSICAL RESPONSES TO PAIN

- Respiratory: if patients are unable to cough or take deep breaths due to pain, their recovery rate is significantly reduced. They also have an increased risk of developing chest infections, hypoxia and possible respiratory failure.
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- Psychological: pain can lead to anxiety, depression, worry, sleep deprivation and mistrust of healthcare professionals.
Behavioural change (refusing to eat, alteration in usual patterns);
Change in body language (rocking, guarding);
Physiological change (blood pressure, heart rate);
Physical change (skin tears, pressure areas).

**PHARMACOLOGICAL APPROACHES**

Kaasalainen et al (2007) highlighted the importance of appropriate pain assessment in older people and difficulties in choosing drug treatment. A common misconception is that patients who do not complain about pain have no pain (Pasero et al., 1999). There is also fear of prescribing opioids because of side effects.

Pharmacological treatments are not without risks, so awareness of the age related changes that can influence drug pharmacokinetics is vital. Drug absorption, distribution, metabolism and excretion can all change with age. Age related changes apply specifically to body composition, adipose tissue distribution, and water and muscle volumes. Evidence suggests sensory neurons decrease in number and sensitivity (Schofield and Simpson, 2009). Listening to patients’ perspectives and respecting their decisions is vital for achieving optimal concordance.

In line with the long established World Health Organization (1990) analgesic ladder, the usual pharmacological process for pain management is to start with mild analgesics, such as paracetamol. If the pain is still not adequately managed, the next step is to add non-steroidal anti-inflammatory drugs, before progressing to mild opioids such as dihydrocodeine, codeine or tramadol. If the pain is still not adequately managed, the next step is to add weak opioids such as codeine (8mg, 15mg, 30mg) known as co-codamol, or dihydrocodeine (10mg, 20mg, 30mg) known as co-dydramol. The British National Formulary notes that compound preparations are less suitable in general as they increase the risk of overdose; it also states adding the low dose of opioid may be enough to cause side effects without providing significant pain relief (British Medical Association and Royal Pharmaceutical Society of Great Britain, 2010).

Paracetamol is available in caplets, tablets, solutions and dispersible tablets. It is vital to check which preparation patients prefer; some may not take the paracetamol because the tablets are too big or because they do not like the taste of dispersible solution. Many over the counter products, such as cold and pain relief preparations, contain paracetamol. It is important to take a full medication history to avoid duplication and potentially serious overdose.

**Paracetamol**

Paracetamol is simple and effective and has minimal side effects. Its significant advantage is the lack of stomach irritation; as such, it is then non-opioid analgesic of choice, especially for treating older people. Its main drawback is that overdosage may cause hepatic damage; sometimes, this does not become apparent for 4-6 days (Waterfield, 2008).

The mechanism of action of paracetamol is not completely understood, but it is believed to reduce pain by interrupting or suppressing pain signals along the nerves. Paracetamol has no significant action on Cox-1 and Cox-2 enzymes, which explains its lack of anti-inflammatory action and the lack of gastrointestinal (GI) side effects (Waterfield, 2008).

Paracetamol can be combined with some weak opioids such as codeine (8mg, 15mg, 30mg) known as co-codamol, or dihydrocodeine (10mg, 20mg, 30mg) known as co-dydramol. The British National Formulary notes that compound preparations are less suitable in general as they increase the risk of overdose; it also states adding the low dose of opioid may be enough to cause side effects without providing significant pain relief (British Medical Association and Royal Pharmaceutical Society of Great Britain, 2010).

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**Non-steroidal anti-inflammatory drugs**

NSAIDs are a large group of drugs used to treat pain and inflammation. Common examples include ibuprofen, diclofenac and naproxen.

NSAIDs inhibit the formation of prostaglandin, which is responsible for modulating inflammation. Prostaglandin also reduces acid production, and increases mucus in the stomach and blood flow to the kidneys. Some of the side effects of NSAIDs therefore include peptic ulceration and salt and water retention. When prostaglandin is inhibited by NSAIDs, less blood reaches the tubules in the kidneys; conditions such as chronic heart failure, hypertension and renal disease are exacerbated (Waterfield, 2008).

A single dose has analgesic activity similar to that of paracetamol. In regular full dosage, NSAIDs have a lasting analgesic and an anti-inflammatory effect. The full effect may not be achieved for up to three weeks. This is particularly significant for prescribers when managing patients’ expectations about pain relief (Waterfield, 2008).

The application of large amounts of topical NSAIDs may result in systemic effects including hypersensitivity and asthma. The interaction section of the BNF (BMA and RPSGB, 2010) states that NSAID interactions do not generally apply to topical formulations.

**Opioids**

Naturally occurring opium-based substances such as the alkaloid morphine are called opiates, while all drugs that act on opioid receptors, natural or synthetic, are called opioids. These receptors are found in the brain, spinal cord and some in the peripheral nerve endings. Opioid drugs are classified according to their action:

- **Agonists**, such as morphine and fentanyl, bind to and stimulate an opioid receptor and are capable of producing a maximal response from the receptor;
- **Partial agonists**, such as buprenorphine, stimulate opioid receptors but have a ceiling effect, that is, they produce a submaximal response compared with an agonist;
- **Agonist antagonists**, such as pentazocine, act as agonist at one type of receptor and antagonist at another;
- **Antagonists**, such as naloxone, bind to, but do not stimulate, the opioid receptor and may reverse the effect of opioids.

Once the drug has bound to the receptor, the function of the cell is changed. This may alter neurotransmission and therefore change potential. Strong opioids such as morphine exert a strong change within the cell, while the weak opioids such as codeine act on the receptors to a lesser extent.

Commonly used weak opioids (codeine, dihydrocodeine and tramadol) are used for moderate to severe pain. Strong opioids (morphine, diamorphine, oxycodone and...
Generally find it easier to manage modified as skin patches. People with constant pain are given as gels, and opioids can be administered with caution as there is a high incidence of side effects.

**CONSIdERATIONS**

Analgesia must be prescribed for older people who are prone to affect the brain and spinal cord. They are often poorly tolerated, and electroenty disturbances are common (Morris, 2008). Drugs with a narrow therapeutic window, such as warfarin and digoxin, are particularly likely to cause problems for older patients. Regular measurements of drug levels should be undertaken.

**REPORTING AND AVOIDING ADRs**

Suspected adverse reactions should be reported to the Medicines and Healthcare products Regulatory Agency, using the yellow card at the back of the BNF or MIMS or online (yellowcard.mhra.gov.uk). The

**LIMITATIONS OF OPIOID USE**

The side effects associated with opioids limit their use and sometimes cause patients to stop treatment despite benefiting from pain relief. Dizziness, nausea and constipation are all common, while constipation can be the most problematic; it can cause bloating, abdominal cramping, nausea and vomiting. For many patients, constipation can have a profound negative impact on quality of life.

Before restarting opioid treatment, prescribers should always warn patients about side effects, provide dietary advice and suggest remedies to prevent constipation, such as laxatives. Many patients who benefit from pain relief but suffer from constipation wonder whether to continue taking opioids or stop the treatment and go back to milder, less effective analgesics. Prescribers should therefore weigh up the risks and benefits with patients; they may need to accept some patients prefer to be in pain rather than experience side effects.

**OTHER MEDICATIONS AND CONSIDERATIONS**

Other medications, used primarily in chronic pain, change the way in which messages are sent along the nerves, or how they are processed by the brain and spinal cord. These include some antidepressants such as amitriptyline and some antiepileptic medicines such as gabapentin.

It is important to consider different ways of delivering medication. NSAIDs can be given as gel, and opioids can be administered as skin patches. People with constant pain generally find it easier to manage modified release formulations such as MST Continus.

**CHALLENGES WITH MEDICATION**

Analgesia must be prescribed for older people with caution as there is a high incidence of sensitivity to medication such as NSAIDs, which increase the risk of GI bleeding. Although age is associated with increased gastric pH and delayed gastric emptying, there is little evidence to suggest that intestinal drug absorption changes with age (Reid et al, 2001). Age related changes in body composition, protein binding and organ blood flow can affect drug distribution. A relative increase in adipose tissue and correspondingly bodily water reduction also affects the volume of distribution. The volume of distribution of water soluble drugs is smaller, and this causes an increase in initial drug concentration. Lipid soluble drugs tend to have an increased volume of distribution, which prolongs their elimination half life (Reid et al, 2001).

There is evidence for age related changes in the rates of metabolism of some drugs (Reid et al, 2001). For example, drugs that undergo oxidation are likely to be metabolised more slowly. Also, older people have reduced first pass metabolism. Drugs that undergo extensive first pass metabolism may therefore show considerably increased bioavailability (Reid et al, 2001), and reduced doses may be indicated in older people. Overall, this effect is amplified by the presence of liver disease. Renal blood flow and renal function decreases in older people. The glomerular filtration rate falls by approximately 30% by the age of 65. Some drugs that are excreted mainly by glomerular filtration will therefore accumulate and their dose should be reduced (British Medical Association and Royal Pharmaceutical Society of Great Britain, 2010). Moreover, older people are potentially more likely to suffer renal tract disease, which reduces drug clearance. It is highly likely that older patients are already on a number of medications. Multiple drugs (polypharmacy) can lead to an increased risk of side effects as well as reduced concordance. Older patients are more likely to develop adverse reactions to different types of analgesic drugs at much lower doses (Popp and Portenoy, 1996).

**ADVERSE DRUG REACTIONS**

A significant adverse drug reaction (ADR) is experienced by around one third of older patients taking multiple medications (Hanlon et al, 1997). ADRs are unpleasant, can lead to hospital admissions and, in exceptional cases, may be fatal (Pirmohamed et al, 2004). Certain long term conditions are common in older people – such as hypertension, ischaemic heart disease and chronic obstructive pulmonary disease – and require multiple medications. In these circumstances, the chance of an ADR is relatively high, and the risk rises with an increased number of medications.

Drug interactions may increase or decrease the activity of one or more drugs. Drugs may interact by enhancing or blocking activity at a specific binding site (receptor or ion channel or transporter molecule or enzyme) (Morris, 2008). For example, a patient with asthma taking an inhaled beta, agonist such as salbutamol may find this less effective if also taking a beta blocker such as atenolol. Beta blockers are therefore contraindicated in asthma and alternative therapy should be sought (McGavock, 2002a). When prescribing a new drug, check BNF appendix 1 for possible interactions.

The key sites of drug metabolism and elimination are the liver and kidneys, and people with impaired liver and/or kidney function are at greatest risk of an ADR from high drug concentration (due to accumulation).

**TYPES AND CAUSES OF ADRs**

ADRs can be classified into two types: type A and type B.

Type A reactions are often predictable, depending on the mode of action of the drug, and are more likely to occur at higher dosage (Courtney and Griffiths, 2008). For example, NSAIDs can cause dyspepsia; opiates cause constipation. These common examples of ADRs can be avoided by either stopping or reducing the drug dosage or, if necessary, by using an alternative drug (McGavock, 2002b).

An adverse reaction may also occur following sudden cessation of a drug, causing withdrawal symptoms. For example, antidepressants and benzodiazepines should be slowly reduced before completely stopping.

Type B ADRs are idiosyncratic in nature, not predictable and unrelated to the drug dose. An example is an anaphylactic reaction to penicillin.

Many drugs, such as NSAIDs, should be used with caution when treating older people. Diuretics are often poorly tolerated, and electrolyte disturbances are common (Morris, 2008). Drugs with a narrow therapeutic window, such as warfarin and digoxin, are particularly likely to cause problems for older patients. Regular measurements of drug levels should be undertaken.

**BOX 2. Socrates Pain Assessment Framework**

| S – severity: none, mild, moderate, severe |
| O – onset: when and how did it start? |
| C – characteristic: is it shooting, burning, aching? Ask the patient to describe it |
| R – radiation: does it radiate anywhere else? |
| A – additional factors: what makes it better? |
| T – time: is there all the time? Is there a time of day when it is worse? |
| E – exacerbating factors: what makes it worse? |
| S – site: where is the pain? |
“black triangle” symbol identifies newer drugs that are still being closely monitored, and all ADRs involving these should be reported through the yellow card system.

Before starting a new drug, it is important to consider carefully whether there are safer options for older patients. Detailed history taking – including details of current drug regimen, over the counter drugs and herbal treatments – is imperative before prescribing.

Prescribers should:
- Always choose the lowest effective dose of the drug to be used for the shortest possible time;
- Start with a lower initial dose and gradually increase if necessary;
- Take into account renal and liver function;
- Liaise with other prescribers, for example GPs, and provide adequate information to patients and carers.

All these measures can help to prevent potential errors, polypharmacy and serious ADRs. It is important that older patients have regular medication reviews (Morris, 2008).

NON-DRUG TREATMENTS
Growing evidence supports the use of non-pharmacological interventions for treating pain. These can include cognitive behavioural techniques, physical methods and complementary therapies (Carr and Mann, 2000).

Behavioural interventions may look at altering certain behaviours to reduce the perception of pain. Cognitive interventions are defined as methods that alter negative thinking styles related to anxiety about a painful situation. This may be by using coping strategies to manage pain. Examples of these techniques include distraction and dissociation (Carr and Mann, 2000), using music, reading, watching television or talking about pleasant subjects. Relaxation techniques can also help patients achieve a state of relative freedom from anxiety and muscle tension, a quieting or calming of the mind and muscles. These techniques can be taught; however, it may difficult to do this on a busy hospital ward.

Physical intervention methods and complementary therapies to help manage pain include:
- Exercise and mobilisation;
- Correct positioning;
- Application of hot or cold;
- Massage;
- Aromatherapy;
- Trans electrical nerve stimulation (TENS);
- Acupuncture;
- Physiotherapy (Flor and Turk, 2006; Gifford et al, 2006).

REFERENCES

BOX 3. ADMINISTRATION OF STRONG OPIOIDS

- Oral (PO): this is the preferred route for patients who are able to eat and drink. Doses need to be larger than when given by other routes.
- Intravenous (IV) including patient controlled analgesia (PCA): this is the quickest route, and 100% of the drug is available. Small boluses can be titrated according to patients’ pain, producing a more constant level of drug. PCA allows patients to administer a small amount (bolus) of an opioid via the specifically preset pump. This system has a lockout time (usually five minutes), so patients have to wait until the next dose becomes available. This prevents them from continuously receiving opioids and potentially overdosing.
- Subcutaneous (SC): not fentanyl; a small butterfly needle may be inserted into the subcutaneous tissue and regular injections can be given through the injection port. May be suitable for those with poor venous access.
- Transdermal: fentanyl and buprenorphine only: the opioid is administered in a patch form. Onset of action usually takes 12-24 hours.
- Submucosal: oral, nasal or pulmonary routes include intranasal diamorphine and fentanyl lozenges.
- Epidural/spinal (intrathecal): this method is used for intra and postoperative analgesia.
- Rectal (PR): morphine only; this is not a common route to administer opioids but may be necessary if all other routes are inaccessible.

CONCLUSION
To become effective practitioners, we need to overcome real or perceived barriers to good pain management. These include the following:
- Beliefs among doctors and other professionals that pain management is not important;
- Poor assessment techniques and the lack of appropriate tools;
- Inadequate dissemination of available knowledge;
- Fear of addiction, tolerance and adverse effects.

Effective individual care plans encourage patients to report their pain freely and take into account each person’s willingness to take medication or not. Careful assessment and the use of appropriate tools will go a long way towards improving the quality care of older patients.

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