Colds and flu medication in the elderly

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Introduction

The common cold is aptly named as it is arguably the most common acute illness that affects mankind. It is generally a benign, self-limiting syndrome, representing a group of diseases caused by over 200 types of viruses. Although the lay public may often refer to a number of diseases, including the common cold, as flu, influenza is a distinctly different entity to the common cold. Both the common cold and flu are respiratory illnesses, and it can be difficult to tell the difference between them, based on symptoms alone. In general, flu is worse than the common cold, and symptoms such as fever, body aches, extreme tiredness and a dry cough, are more common and intense. Colds are usually milder, and patients with colds are more likely to have a runny or stuffy nose. Generally, colds do not result in serious health problems such as pneumonia, bacterial infections, or hospitalisations.

It is especially important to distinguish between the common cold and influenza in the elderly. Rates of severe illness and death are highest in patients aged ≥ 65 years, compared to younger patients, and accurate diagnosis will influence treatment options.

The common cold is the most usual reason for a visit to general practitioner or pharmacy, and elderly patients may often present to the pharmacy requiring over-the-counter (OTC) treatment for these symptoms. Studies in the USA have shown that adults over the age of 65 years are the largest users of prescription and OTC medications. Due to various factors, discussed below, elderly patients have a three to seven times greater incidence of adverse drug reactions compared to the younger population, and treating these patients can be challenging.

Special aspects of geriatric pharmacology

Changes in pharmacokinetics

Absorption

There is little evidence of any major alterations of drug absorption with age. However, certain conditions, including changes in the physiology of the gastrointestinal tract, may alter the absorption of orally administered drugs.

Distribution

Compared to young adults, the elderly have reduced lean body mass, reduced body water, and increased fat as a percentage of body mass. Colds are usually milder, and patients with colds are more likely to have a runny or stuffy nose. Generally, colds do not result in serious health problems such as pneumonia, bacterial infections, or hospitalisations.

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Abstract

Elderly patients often request treatment for cold and flu symptoms. Product selection may be more complicated in this patient group. The elderly are more at risk of adverse drug reactions due to an increased number of medical conditions and drugs taken, and also because of altered pharmacokinetics and pharmacodynamics, impaired renal function, reduced hepatic blood flow and liver size, increased body fat, decreased lean body mass, and changes in receptor sensitivity. This article will review the factors affecting pharmacology in the elderly, as well as the possible risks associated with some common products used in the treatment of colds and flu.

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Elimination

The kidney is the major organ that eliminates drugs from the body. The age-related decline of renal function is an important consideration. A decline in creatine clearance occurs in approximately two thirds of the population. Decreased clearance may lead to prolongation of the half-life of drugs that are eliminated by the kidneys primarily, creating the possibility that these drugs could accumulate to toxic levels.

Changes in pharmacodynamics

Older patients may be more sensitive to higher doses and the plasma levels of certain drugs. Animal studies have suggested that the reason for this may be due to changes, with age, in the numbers and characteristics of drug receptors. A blunting in certain homeostatic control mechanisms and physiological decline occurs with age, and changes the body's response to drugs.

For example, generally, postural control is poor in the elderly, and the use of sedative drugs leads to an increased risk of falls. Thermoregulation may be blunted, and symptomatic orthostatic hypotension is markedly increased in this population. Drugs that aggravate these conditions should be avoided.

Drug interactions and co-morbidities

Due to an age-related decline in physiological function, in general, the elderly have an increased number of medical conditions. Studies in the USA have shown that adults over the age of 65 are the largest users of prescription and OTC medications. The positive relation between the number of drugs taken, and the incidence of adverse drug reactions, has been well documented. The number of patients with adverse reactions increased from 10% when a single drug was taken, to nearly 100% when 10 drugs were taken. In addition to considering drug-drug interactions when treating the elderly, drug-nutrient and drug-disease interactions may all have significant adverse effects.

Treatment recommendations

Over-the-counter drugs

Symptomatic therapy is the backbone of treatment for the common cold. Usually, cold and flu preparations contain different combinations of drugs. Some components should be used with caution in the elderly.

Topical and oral decongestants should be avoided or used with caution in patients with heart disease, hypertension, thyroid disease, diabetes, glaucoma, or benign prostatic hyperplasia, all of which are more common in the elderly. People taking monoamine oxidase inhibitors for depression may experience a life-threatening rise in blood pressure if they also take a decongestant.

The commonly used decongestant, pseudoephedrine, may lead to hypertension, vasoconstriction, arrhythmia and stroke. These side-effects may be more pronounced when the drug is used in conjunction with other pro-arrhythmic drugs, for example, beta blockers or digoxin.

Antihistamines with anticholinergic properties, such as diphenhydramine, are often used to treat cold symptoms, such as coughing and insomnia. A drug with even mild anticholinergic effects may cause acute urinary retention in elderly patients with benign prostatic hyperplasia, or may precipitate dementia in patients with mild Alzheimer's disease. Other side-effects include cognitive dysfunction, disrupted sleep, confusion, hallucinations, and delirium. Decreased vision and motor reflexes have also been reported which increase the patient's risk of injury due to a fall. These side-effects may render the use of antihistamines and antihistamines with anticholinergic effects, i.e. first-generation or classical antihistamines, inappropriate in the elderly.

Dextromethorphan is a morphine derivative, often used as a cough suppressant. Although rare, dizziness, lethargy and nausea have all been reported with its use, which may be problematic in the elderly.

Pain is a common complaint in patients seeking treatment for colds and flu, and drugs such as paracetamol, aspirin, ibuprofen and codeine are often included in cold and flu preparations. NSAIDs, such as aspirin and ibuprofen, should be used with caution in older adults as studies have shown that these patients are at increased risk of gastrointestinal bleeding with NSAID use, compared to younger individuals. NSAIDs are also potentially nephrotoxic. There may be serious consequences if used in patients with impaired renal function.

Although paracetamol is commonly recommended in older adults, paracetamol-related toxicities are not uncommon in older patients. The toxic dose of paracetamol in a chronic older user can be as little as 2 g a day. It is important to check the concentrations of paracetamol in the different OTC preparations that the patient is taking, as this can often lead to an overdose, as a result of unintentional therapeutic duplication.

Theophylline is sometimes used in OTC cough preparations. Due to its narrow therapeutic window and potential toxicity, it should be used with caution in the elderly in general, and should not be used in elderly patients who are already using theophylline for asthma or chronic obstructive pulmonary disease.

Antimicrobial drugs

Antibiotics are not effective in the treatment of either the common cold or flu, and should not be prescribed unless there is convincing evidence of a secondary bacterial infection. Due to several age-related physiological changes in the elderly, they are more susceptible to complications from a viral infection. Therefore, they should be closely monitored for any exacerbation of cold and flu symptoms.

Antiviral drugs

Currently, oseltamivir and zanamivir are the recommended antiviral agents for the treatment of influenza, since surveillance and resistance data indicate that > 99% of currently circulating influenza virus strains are sensitive to these agents. The National Institute of Communicable Diseases (NICD) recommends that elderly patients should be treated with oseltamivir twice daily for five days, and that treatment should be started as soon as possible within two days of the start of symptoms. The currently circulating
influenza strains are said to be resistant to amantadine and rimantadine, and their use is not currently recommended.4 Plasma amantadine concentrations are influenced by renal function. Compared with healthy young adults, the half-life of amantadine may be doubled, and renal clearance diminished in the elderly.11 In elderly patients with renal impairment, repeated administration of 100 mg daily for 14 days raised the plasma concentration into the toxic range.11 Anticholinergic side-effects, such as urinary retention, have also been reported with amantadine use.10 Care should be taken not to prescribe amantadine for influenza in patients already taking the product for Alzheimer’s disease.

Preventative measures

An annual influenza vaccination remains the best protection from influenza, and is recommended for all patients over the age of 65 years.12

Conclusion

Treating the elderly for cold and flu symptoms can be challenging, and rational drug use is even more important in the elderly than in other age groups because of the presence of concomitant medical conditions and concurrent drug therapy. Cold and flu medicines should only be used in the elderly if no other treatment options are available, and then at the lowest dosage, for the shortest period, using the simplest regimen. Drug interactions, co-morbidities and pharmacokinetic changes should be considered to minimise the risk of adverse reactions.

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