Depression in older people can significantly impair social, cognitive and physical functioning. It is commonly misdiagnosed and often undertreated, as it may be mistaken for comorbid diseases such as dementia. In aged care residents, the condition may present as somatic complaints.

Major depression can be caused by psychological, psychosocial, medical and medication factors. Two of the most common causes of depression in the elderly are comorbid medical conditions and medications.

**Definition**
The DSM-IV definition of depression requires at least 5 or more symptoms for at least 2 weeks:
- insomnia or hypersomnia
- changes in weight or appetite
- psychomotor agitation or retardation
- fatigue or lack of energy
- irritable mood
- feelings of worthlessness or inappropriate guilt
- concentration impairment
- anhedonia (decreased interest in pleasurable activities)
- suicidal thoughts or actions

A mental status examination should be performed using Geriatric Depression Scale, Hamilton Depression Scale or Cornell Scale for Depression in Dementia.

**Medical causes**
Diseases that can lead to depression include:
- hypothyroidism
- anxiety
- Alzheimer’s disease
- Parkinson’s disease
- post stroke (CVA)
- hypertension
- arthritis
- alcoholism
- metabolic disorders
- cardiovascular disease

Depression can present symptoms of many disorders, as it is in more than half the cases of Parkinson’s disease.

**Medication causes**
Symptoms of depression may also appear as an adverse effect of medications prescribed for many medical conditions.

It is important to realise that not everyone receiving one of these medications will develop major depression. Symptoms of depression appearing after a recent change in dose or addition of medication may signal a medication-related cause.

The development of mood symptoms related to a medication is more likely in a person who has a predisposition to a mood disorder such as depression and a family history of psychiatric disorders.

Quick resolution of symptoms in days or weeks after cessation of the medication provides good evidence that the medication has induced the depression.

Medications that have been linked to depression include:
- **H2 Antagonists**
  - Cimetidine (*Tagamet, Magicul*)
  - Ranitidine (*Zantac, Rani-2*)
- **NSAIDs/Analgesics**
  - Opioids
  - Indomethacin (*Indocid, Arthrexin*)
- **Cardiovascular medications**
  - Methyldopa (*Aldomet*)
  - Hydralazine (*Apresoline, Alphapress*)
  - Propranolol (*Inderal*)
  - Prazosin (*Minipress, Pressin*)
  - Clonidine (*Catapres*)
  - Digoxin (*Lanoxin, Lanoxin-PG*)
  - Calcium channel blockers (e.g. nifedipine, amlodipine, felodipine, diltiazem, verapamil)
  - Thiazide Diuretics (e.g. hydrochlorothiazide)
- **Steroids**
  - Corticosteroids (e.g. prednisone, prednisolone, dexamethasone)
  - Anabolic Steroids (e.g. Deca-Durabolin)
  - Progestin-releasing implanted contraceptives (*Implanon*)
- **Antiparkinsonian medications**
  - Levodopa (*Sinemet, Madopar*)
- **Sedative-hypnotics**
  - Alcohol
  - Barbiturates
  - Chloral hydrate
- **Others**
  - Amphetamine withdrawal
  - Baclofen (*Lioresal*)
  - Finasteride (*Proscar, Propecia, Finasta, Finmacer*)
  - Interferon-alpha

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- Interferon beta-1b, peginterferon alfa-2b
- Isotretinoin (*Roaccutane*)
- Levetiracetam (*Keppra Oral*)
- Metoclopramide (*Maxolon*)
- Traditional antipsychotics (e.g. haloperidol)

This list does not include all the medications ever reported to cause depression.

Interferon alfa-2a and interferon alfa-2b are used in the treatment of chronic hepatitis B and C.

Interferon beta has both antiviral and immunoregulatory activities and is used in the management of multiple sclerosis (MS). It can reduce the frequency and severity of attacks.

Finasteride is a competitive inhibitor of 5 alpha-reductase enzyme, frequently used in older men for treatment of benign prostatic hyperplasia (BPH).

There have been some reports that benzodiazepines may cause depression. However, benzodiazepines are most often prescribed for anxiety and insomnia, both of which are commonly associated with depression.

The association between levodopa and depression is difficult to confirm, as depression is also a feature of Parkinson’s disease. One study has reported a higher prevalence of depression in patients with Parkinson’s disease treated with levodopa compared with patients treated with amantadine or anticholinergics.

All beta-blockers probably do not cause depression. Propranolol is the medication from this class, shown to have a link with depressive symptoms.

A number of case reports have implicated calcium channel blockers and ACE inhibitors in the onset of depressive symptoms. Other reports have shown that ACE inhibitors are not likely to be associated with depression, and may in fact improve mood.

Chronic conditions such as cardiovascular disease have been shown to increase the risk of depression. Monitoring for symptoms of depression in people with cardiovascular disease, both before and during antihypertensive treatment is recommended.

Symptoms

Many common symptoms of depression (e.g. fatigue, sleep changes, gastrointestinal problems) arise as adverse effects of medication.

All the criteria for depression detailed above do not need to be met for a diagnosis of medication-induced depression.

Treatment and prevention

When new or worsening symptoms of depression occur, all medication changes occurring before the emergence of depressive symptoms should be reviewed to determine whether any of the new medications may be responsible for the observed symptoms. Medications potentially associated with the emergence of symptoms of dementia or delirium (e.g. anticholinergic medications) should also be identified, as these conditions may at times present similarly to depression.

If possible, the suspected medication should be ceased. Resolution of symptoms can take time but is usually less than 4 weeks. Psychosocial support may be useful.

Practice guidelines recommend treating with interferon-alpha for patients who develop any depressive symptoms with an SSRI antidepressant. Prophylactic SSRI treatment for patients with a history of depression who need interferon-alpha has also been suggested.

Residents with any history of mood symptoms who require treatment with steroids such as dexamethasone, prednisone or prednisolone may also be prophylactically treated with an antipsychotic concomitantly with the steroid treatment. This can decrease or prevent manic symptoms caused by steroids.

Summary

A small number of medications may induce symptoms of depression. Drug-induced depression appears to differ symptomatically from classical major depression. When a medication-induced mood disorder is suspected the offending medication should be discontinued where possible. Suitable alternate medications may be prescribed after considering the risks and benefits. Residents may need support until the severity of the symptoms decline.

Residential Medication Management Reviews (RMMRs) are recommended to identify and resolve medication-related depression.

References

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