

DYSLIPIDAEMIA

Patients with a thrombotic stroke with not more than moderate disability (Rankin Grade 3, i.e. who need some help but can walk without any assistance) need HMGCoA reductase inhibitors (statins) for secondary prevention, irrespective of the LDL level e.g.:

- simvastatin, oral, 10 mg daily

A baseline cholesterol should be done though to exclude severe major gene defects.

If dyslipidaemia is present, manage appropriately with diet and drug treatment. See Section 8.9: Dyslipidaemia.

Treat secondary pulmonary and urinary tract infections early and appropriately.

REFERRAL

- patients with atypical clinical presentation
- patients with TIA who may warrant carotid endarterectomy
- young patients, i.e. < 40 years, with stroke, for evaluation of aetiology
- spontaneous subarachnoid haemorrhage who are surgical candidates, i.e. conscious patients
- suspected cerebellar haemorrhage

14.1.2 SUBARACHNOID HAEMORRHAGE

I60

DESCRIPTION

Bleeding into the subarachnoid space, most commonly due to the rupture of a vascular aneurysm. Patients frequently present with an acute onset of severe headache and may have additional neurological symptoms and signs. Diagnosis is confirmed either by lumbar puncture, demonstrating xanthochromia or neurological imaging.

NON-DRUG TREATMENT

Maintain normal hydration and electrolyte status.

Control blood pressure.

Should patient improve later, refer.

DRUG TREATMENT

Analgesia if level of consciousness is not impaired:

- morphine, IV, 1–2 mg/minute to a maximum total dose of 10 mg
Dilute 10 mg up to 10 mL in sodium chloride solution 0.9%.
This may be repeated 4 hourly.

REFERRAL

- all patients with minimal impairment of consciousness level for angiography and appropriate neurosurgical management
- for neurological imaging: Patients in whom the diagnosis has to be confirmed radiologically and where a lumbar puncture may be considered hazardous.

14.2 DELIRIUM

F05.9

DESCRIPTION

Confusional states/delirium are characterised by altered consciousness, accompanied by impairments in orientation to time and place but seldom to person. Such presentations may fluctuate and be accompanied by disturbed behaviour e.g. agitation/stuporose as well as experiencing of visual/tactile or gustatory hallucinations and even paranoid ideation. The onset will represent a significant change in the patient's mental state.

In acute psychosis, schizophrenia, mania and drug included psychosis, the level of consciousness is unchanged, whereas it is altered in delirium and dementia.

Clouding of consciousness has many causes including infections, metabolic and nutritional disturbances, organ failure, inappropriate reaction to or toxicity of medicines and alcohol withdrawal. Focal neurological causes include meningitis, brain abscess, subdural haemorrhage and brain tumour, amongst others.

Two forms of delirium exists:

- hypoactivity with decreased alertness
- hypoactivity with increased alertness, restlessness and agitation

NON-DRUG TREATMENT

Reassure the patient and protect him/her from injury. An attendant, e.g. family member, should be present at all times.

Take measures to prevent falls from high beds. Cot sides are dangerous.

Adequate sedation is more appropriate than restraint.

Monitor and manage fluid, blood sugar and electrolyte status. The fluid balance is very important.

DRUG TREATMENT

Avoid unnecessary drugs.

Treat underlying conditions according to guidelines.

Sedatives are essential e.g.:

- clonazepam, IM, 2 mg

OR

lorazepam, IM, 2 mg

Maximum daily dose: 6 mg.

OR

diazepam, IV, 10–20 mg slowly at rate of not more than 5 mg/minute

CAUTION

Benzodiazepines, especially diazepam IV, can cause respiratory depression. Monitor patients closely as benzodiazepines can exacerbate an abnormal mental state or mask important neurological signs of deterioration.

Note:

The safest route of administration is oral followed by IM with the IV route having the highest risk of respiratory depression and arrest. Use the safest route wherever possible.

Monitor vital signs closely during and after administration.
Use haloperidol in patients with respiratory insufficiency.
In the short-term, benzodiazepines can aggravate delirium.
To avoid inappropriate repeat dosing allow at least 15–30 minutes for the drug to take effect.

Hallucinations:

- haloperidol, IV, 0.5–5 mg initially
May be repeated at 50–60 minute intervals to a maximum of 20 mg daily.

Depending on response, continue with:

- haloperidol, oral, 0.5–5 mg 3 times daily

To prevent Wernicke's encephalopathy:

- thiamine, oral/IM, 100 mg daily

REFERRAL

- if the underlying condition warrants referral

14.2.1 ALCOHOL WITHDRAWAL DELIRIUM (DELIRIUM TREMENS)

F10.4

DESCRIPTION

Although the typical delirium occurs 2–3 days following cessation of prolonged alcohol intake, reaching a peak at around 5 days, some withdrawal symptoms, such as the typical tremor, may start within 12 hours.

Typical clinical features include:

- predominantly visual hallucinations
- disorientation
- agitation
- tachycardia
- hypertension.

A low-grade fever may be present. Withdrawal tonic-clonic seizures may occur between 24 and 48 hours following cessation of alcohol intake.

It is important to consider alternative causes, when making the diagnosis. This is especially true for cases with an atypical presentation.

Similar symptoms may occur following withdrawal from other sedative-hypnotic agents. Mortality figures vary from 1–5%. Subsequent episodes of withdrawal progressively worsen.

NON-DRUG TREATMENT

The above points under Delirium management apply. In addition:

Monitor vital signs regularly. Cardiac monitoring and oximetry should be used when administering large doses of benzodiazepines.

Correct dehydration and abnormalities of electrolytes and nutrition.

Consider parenteral fluids to compensate for severe losses, i.e. in hyperthermia.

Consider meningitis as part of the differential diagnosis in febrile patients. Consider referring appropriate patients for a formal withdrawal and rehabilitation programme.

DRUG TREATMENT

Symptom-triggered regimens are associated with administering a smaller total dose of medication and a shorter total hospital stay. Administer drug doses according to severity of symptoms. See Section 15.11: Withdrawal from Substances of Abuse.

Benzodiazepines are the sedative-hypnotic of choice:

- diazepam, slow IV, 10 mg (**Not IM**).
Repeat dose after 5–10 minutes if required.
If this dose is not sufficient, use 10 mg every 5–10 minutes for another 1–2 doses.
If patient is not yet sedated, continue with doses of 20 mg until this occurs.
Usual initial dose required is 10–20 mg, but up to 60 mg is occasionally required.

OR

Where intravenous access is not possible:

- clonazepam, IM, 2 mg as a single dose
OR
lorazepam, IM, 1–4 mg every 30–60 minutes until patient is sedated
Repeat doses hourly to maintain mild sedation.
Maximum daily dose: 6 mg.

Once patient is sedated, i.e. light somnolence, maintain mild sedation with:

- diazepam, oral, 5–20 mg 2–6 hourly

CAUTION

Benzodiazepines, especially diazepam IV, can cause respiratory depression. Monitor patients closely as benzodiazepines can exacerbate an abnormal mental state or mask important neurological signs of deterioration.

Haloperidol

Neuroleptic medicines, such as haloperidol are associated with a lower threshold for developing seizures. Consider only for severe agitation and restlessness and are only give in combination with one of the sedative-hypnotic agents above.

- haloperidol, IV/IM, 0.5–5 mg
Repeat after 4–8 hours as required to a maximum of 20 mg.
Once patient has responded and is able to take oral medication:

- haloperidol, oral, 0.5–5 mg 4–8 hourly

Especially when administering glucose-containing fluids:

- thiamine, oral/IM, 100 mg daily

14.3 DEMENTIA

F02*

DESCRIPTION

Progressive loss of cognitive function, usually of insidious onset. Initial presentation may be with mild personality or memory changes, before more pronounced defects become more evident.

Patients need to be investigated for treatable (reversible) systemic, neurological and psychiatric illnesses.

Transient worsening of condition may be due to metabolic disorders, infections and drug side effects.

NON-DRUG TREATMENT

Appropriate care and support, according to level of impairment.

Ambulatory care is preferred to hospitalisation, if feasible.

Family counselling and support.

DRUG TREATMENT

Management is mainly symptomatic.

To control the restless patient:

- haloperidol, oral, 0.5–1 mg 3 times daily with the higher dose at night if required

PELLAGRA

Due to deficiency of niacin/nicotinamide.

Features may include dermatitis, diarrhoea and dementia.

- nicotinamide, oral, 100 mg three times daily

AIDS DEMENTIA

May be treatable with ARVs.

Exclude opportunistic diseases of CNS.

REFERRAL

- patients, in whom a treatable underlying condition is suspected, for specialised investigations including a CT scan

14.4 EPILEPSY

G40

NON-DRUG TREATMENT

Record keeping in a seizure diary recording dates and if possible the times of the seizures. Present seizure diary at each consultation for assessment of therapy. Disease identification bracelet, necklace or card.

Counselling and advice on:

- the adverse effect of alcohol on seizures
- the effect of missing a dose of medication
- discontinuing the drug without advice of the doctor

Take adequate history to define the type of epilepsy.

DRUG TREATMENT

The aim is to use monotherapy i.e. a single anticonvulsant, progressively increasing the dose until the seizures are controlled or clinically important side effects occur. Patients with a history of myoclonic seizures or typical absences should preferably be treated with sodium valproate, as these seizures may be aggravated by the use of either phenytoin or carbamazepine.

Regular monitoring of drug levels is not useful except:

- to confirm toxicity in a symptomatic patient
- to confirm poor adherence
- with poor control and self reported adherence
- when contemplating dose increments beyond doses exceeding 5 mg/kg/day or 400 mg/day with phenytoin

A single unprovoked seizure is usually not an indication for treatment.

Appropriate advice regarding birth control bearing in mind adherence issues and potential drug-drug interactions.

PARTIAL SEIZURES OR GENERALISED TONIC CLONIC SEIZURES

The choice between therapeutic agents must be made on the acceptability of side-effects and how the number of doses influences lifestyle.

- carbamazepine, oral, 200 mg twice daily for first 2 weeks, then 300 mg twice daily, increasing at fortnightly intervals to a maximum dose 600 mg twice daily as required
OR
phenytoin, oral, 4.5–5 mg/kg on lean body mass daily
Dose changes over 300 mg should only be done in no more than 50 mg increments at intervals no shorter than 2 weeks.

Once adherence has been addressed and a second line agent is required, consider monotherapy:

- sodium valproate, oral, 200–300 mg twice daily, starting dose
Increase, as required, every 2 weeks to a maximum daily dose of 1 200 mg twice daily.
Sodium valproate should be considered as primary antiepileptic therapy in HIV patients needing antiretroviral therapy because of fewer drug interactions.

Phenobarbital is not recommended as first line agent because of sedation, but may be used in selected patients e.g. mental retardation.

Phenytoin, phenobarbital and carbamazepine are potent enzyme inducing agents and should be used with caution with other drugs metabolised by the liver, especially warfarin, ARVs and oral contraceptives.

Combination antiepileptic drugs should only be used in consultation with a specialist.

OTHER EPILEPSY TYPES

Manage in consultation with a specialist.

Ethosuximide, lamotrigine and clonazepam may be indicated for long-term management.

STATUS EPILEPTICUS

See Section 14.4.1: Status Epilepticus.

PREGNANCY

Optimal control of epilepsy on single agent is best management.

Do not initiate valproate during pregnancy, as it is associated with a higher teratogenic potential than the other first line agents.

Before pregnancy is considered, folate supplementation:

- folic acid, oral, 5 mg daily

Pregnancy leads to changing drug levels – adjust dose according to levels.

Pregnant women:

ADD

- folic acid, oral, 5 mg daily

REFERRAL

- all new onset epileptics for neuroimaging, if unavailable locally
- epileptics who are poorly controlled on adequate treatment
- for consideration of combination therapy
- epilepsy with unexplained neurological symptoms or signs

14.4.1 STATUS EPILEPTICUS

G41

DESCRIPTION

Persistent seizures, without regaining consciousness.

NON-DRUG TREATMENT

Start treating immediately – do not wait for results of special investigations.

Maintain cardiorespiratory status.

Maintain fluid, electrolyte and blood sugar status.

Blood specimen for electrolytes and anticonvulsant levels.

DRUG TREATMENT

Seizure control should occur within 60 minutes to prevent permanent brain damage.

INITIAL TREATMENT

- diazepam, IV, 10–20 mg, not faster than 2 mg/minute

OR

clonazepam, IV, 1 mg

May be repeated after 5 minutes.

Maximum dose: 4 mg.

OR

lorazepam, IV/IM, 4 mg

OR

If there is no venous access:

diazepam, rectal, 10 mg using the contents of an ampoule

OR

clonazepam, IM, 1 mg

OR

midazolam, buccal, 5–10 mg using the contents of an ampoule

AND

- phenytoin, IV, 20 mg/kg diluted in sodium chloride 0.9% (**and not dextrose**) administered not faster than 50 mg/minute preferably with cardiac monitoring. If arrhythmias occur, interrupt the infusion temporarily and reintroduce slowly. If there is no venous access, give same dose orally or via nasogastric tube. Flush the tube after administering phenytoin.

Seizures continuing after 30 minutes

Intubate and ventilate patient.

- thiopental sodium, IV, 2–4 mg/kg, followed by 50 mg bolus every 2–3 minutes to control seizures
Maintenance dose: 1–5 mg/kg/hour.
Beware of hypotension.
Once seizures controlled for 24 hours, wean off thiopental sodium by decreasing dose by 1 mg/kg every 12 hours.

Higher initial maintenance doses of phenytoin may be needed in patients that have had thiopental sodium. Doses should be guided by daily therapeutic drug monitoring until phenytoin levels have stabilised after pentothal sodium has been weaned.

MAINTENANCE THERAPY**If seizures controlled**

- phenytoin, IV, 100 mg 8 hourly or oral, 300 mg daily
First maintenance dose should be no more than 12 hours after the loading dose.

Long term maintenance therapy: See Section 14.4: Epilepsy.

14.5 HEADACHE AND FACIAL PAIN SYNDROMES**14.5.1 MIGRAINE**

G43

DESCRIPTION

Episodic headache, usually focal in nature, which may occur with or without an aura in the majority of cases (80% of cases). It is usually accompanied by nausea and vomiting. Several variants of migraine also occur.

NON-DRUG TREATMENT

Reassure patient that this is a benign condition.

Attempt to identify food allergies and try to diminish patterns of tension.

Health education.

DRUG TREATMENT**ACUTE TREATMENT**

Initiate therapy during the attack or at the very onset of the headache.

Analgesics, e.g.:

- paracetamol, oral, 1 g immediately, then 4 hourly if needed
- OR**
- aspirin, soluble, oral, 600 mg, immediately then 4 hourly if needed
- OR**
- NSAIDs, e.g.:
- ibuprofen, oral, 800 mg immediately then 8 hourly if needed

For nausea:

- metoclopramide, oral/IM, 10 mg 3 times daily

PROPHYLAXIS

Regular, daily, prophylactic therapy is advised if attacks are frequent, i.e. more than 2–3 per month, or severe, causing a significant amount of disability or attacks are long lasting. Also consider for patients who poorly tolerate therapy for acute attacks.

- amitriptyline, oral, 10–25 mg at bedtime
Titrate dose up to adequate response.
More than 75–150 mg as a single bedtime dose is seldom required.
- OR**
- atenolol, oral, 50–100 mg daily
- Note:**
Evidence for using atenolol for this indication is limited.
Only about half of patients will respond to one of these agents.

REFERRAL

- patient with additional neurological signs or additional risk factors for an alternate diagnosis, such as immune deficiency. These patients require brain imaging.



CHAPTER 14

NEUROLOGICAL DISORDERS

- sudden onset of a first severe headache, even if it resembles migraine, as this may indicate serious organic pathology, such as subarachnoid haemorrhage
- acute migraine, not responding to treatment
- recurrent migraine not controlled with prophylactic therapy

14.5.2 CLUSTER HEADACHE

G44.0

DESCRIPTION

Repetitive episodes of excruciating headache typically of short duration (up to 2 hours) in clusters for weeks to months at a time. Typically the headache is of sudden onset, unilateral during the specific cluster and quickly reaches a climax. Associated redness of the eye with lacrimation and rhinorrhoea occurs.

NON-DRUG TREATMENT

Oxygen inhalation may abort some episodes.

DRUG TREATMENT

Analgesics are ineffective in this indication.

To induce rapid remission in patients with episodic cluster headache:

- prednisone, oral, 40 mg daily for 5–10 days. Tapering is not necessary.

If no response to prednisone, refer.

REFERRAL

- inadequate response to treatment

14.5.3 TRIGEMINAL NEURALGIA

G50.0

DESCRIPTION

Severe, very short lived stabs of facial pain in the sensory trigeminal distribution. It is important in the diagnostic workup to exclude intracranial mass lesions, impinging on the trigeminal nerve.

DRUG TREATMENT

- carbamazepine, oral, 100 mg 2–3 times daily, initial dose
Increase dose slowly. Doses of up to 1 200 mg daily may be required.
After exacerbation: reduce to maintenance dose of 400–800 mg daily.

REFERRAL

- neuro-imaging, if not available locally
- poor response to single drug therapy

14.5.4 TENSION HEADACHE

G44.2

DESCRIPTION

Headache over the back of the head, but sometimes over the entire head, being described as a tight band around the head, usually worse in the afternoon.

NON-DRUG TREATMENT

Consider use of relaxation techniques.

The importance of this diagnosis is the exclusion of other, more sinister conditions. Exclude analgesia overuse headache.

DRUG TREATMENT

- amitriptyline, oral, 25–75 mg at night

REFERRAL

- atypical pain, suggestive of alternate diagnosis
- poor response to therapy

**14.5.5 IDIOPATHIC (BENIGN) INTRACRANIAL HYPERTENSION
(PSEUDOTUMOUR CÉRÉBRI)**

IG93.2

DESCRIPTION

Patients present with signs (papilloedema) and symptoms (chronic headache and sometimes eventual visual loss due to persistent papilloedema) of raised intracranial pressure without any structural intracranial abnormality or abnormal CSF composition. To make this diagnosis, the presence of raised CSF pressure > 20 cm H₂O at lumbar puncture and the absence of structural lesions or hydrocephalus with neuro-imaging. This is a diagnosis of exclusion.

NON-DRUG TREATMENT

Not all patients require definite treatment.

Regular monitoring of visual fields is crucial.

Weight loss (15%).

Repeated lumbar punctures.

Consider surgery for progression of visual effects, despite medical therapy, visual loss at onset or severe papilloedema.

DRUG TREATMENT

All patients need to be discussed with a specialist.

For visual involvement, persistent headaches or severe papilloedema:

- acetazolamide, oral, 1–2 g daily
OR
furosemide, oral, 40 mg daily
OR
hydrochlorothiazide, oral, 25 mg daily

REFERRAL

- for neuro-imaging, if not available locally
- visual symptoms or deterioration of visual fields for ophthalmology evaluation
- patients not responding to therapy or in need of surgical management

14.6 INFECTIOUS AND PARASITIC CONDITIONS**14.6.1 MENINGITIS**

G02.8*

DIAGNOSIS

Lumbar puncture for chemistry and bacteriology / fungal investigation should be done in all cases.

Computed tomography needs to be done first, in all patients with:

- focal neurological signs present
- recent onset of seizures
- papilloedema
- reduced level of consciousness
- significant uncontrolled bleeding tendency

In cases where lumbar puncture is delayed or cannot be done, commence empirical antibiotic therapy after taking samples for blood cultures. Attempt the lumbar puncture later, once possible.

NON-DRUG TREATMENT

Observe patient closely with regular monitoring of vital signs and neurological state.

Pay close attention to nutritional and hydration status.

Nurse patients in a quiet, semi-dark surrounding.

In uncomplicated bacterial meningitis, repeated lumbar punctures are of no benefit.

DRUG TREATMENT

All patients require sufficient analgesia.

- paracetamol, oral, 1 g 6 hourly

AND/OR

- ibuprofen, oral, 800 mg immediately, then 400 mg 8 hourly thereafter

AND/OR

- morphine, IV, 1–2 mg/minute to a maximum total dose of 10 mg

Dilute 10 mg up to 10 mL with sodium chloride solution 0.9%.

This may be repeated 4 hourly.

Beware of respiratory depression in patients with reduced level of consciousness.

BACTERIAL MENINGITIS

**N. meningitidis* and *H. influenzae* Type B are notifiable conditions.

For non-meningococcal aetiology

- dexamethasone, IV, 10 mg 6 hourly for 4 days
OR
betamethasone, oral, 10 mg 6 hourly for 4 days
Give prior to initiation of antibiotics or less than 30 minutes after initiation of therapy.
Stop if meningococcus is cultured.

Bacterial aetiology unknown, community acquired

- ceftriaxone, IV, 2 g 12 hourly for 10 days
OR
cefotaxime, IV, 2 g 8 hourly for 10 days

Meningococcal

For confirmed meningococcal disease only:

- benzylpenicillin (Penicillin G), IV, 20–24 million units daily in 4–6 divided doses for one week

Prophylaxis of contacts:

Only for close household contacts. Only healthcare workers who have resuscitated patient/s before treatment for 24 hours should receive prophylaxis.

- ciprofloxacin, oral, 500 mg immediately as a single dose

Pneumococcal

This organism may be associated with other respiratory disease or CSF leaks.

If sensitive:

- benzylpenicillin (Penicillin G), IV, 20–24 million units daily in 4–6 divided doses for 10 days

If any degree of resistance is present or cannot be excluded:

- ceftriaxone, IV, 2 g 12 hourly for at least 10 days
OR
cefotaxime, IV, 2 g 8 hourly for at least 10 days

Penicillin allergy

Consult a microbiologist.

Note:

Chloramphenicol sensitivity testing is not routinely done on *Pneumococcus* cultures. Penicillin resistant strains of *Pneumococcus* are usually also resistant against chloramphenicol.

For meningococcus, *pneumococcus* or *haemophilus* if organism is sensitive:

- chloramphenicol, IV, 1 g 6 hourly

OR

For resistant *pneumococcus*:

- vancomycin, IV, 40 mg/kg daily

PLUS

- rifampicin, oral, 600 mg 12 hourly

HOSPITAL ACQUIRED/POST SURGERY MENINGITIS

Frequent causes are pseudomonas and staphylococcus.

Refer.

TUBERCULOUS MENINGITIS

CSF findings are extremely variable. Initially polymorphs predominate in about a third of patients. Protein is usually > 1 g/L and glucose is usually low.

In cases where the differential diagnosis between bacterial and tuberculous meningitis is in doubt, lumbar puncture should be repeated 2 days later while still on ceftriaxone/cefotaxime. If aetiology is bacterial, considerable improvement in CSF findings may be expected, but with tuberculosis findings will be much the same or a little worse.

- dexamethasone, IV, 10 mg 12 hourly

OR

betamethasone, oral, 10 mg 12 hourly

Taper dose over 6–12 months.

Dexamethasone has been shown to reduce mortality but not morbidity.

Standard combination tuberculosis therapy according to National protocol.

See Section 16.10: Tuberculosis, Pulmonary.

Duration of therapy: 9 months.

CRYPTOCOCCAL MENINGITIS

HIV positive cases:

See Section 10.1.2: Cryptococcosis.

In HIV negative patients the aim is to cure the infection, whilst in HIV infection the aim is to suppress the infection until the immune restoration occurs with antiretroviral therapy.

- amphotericin B, IV, 0.7 mg/kg daily for up to 6 weeks
The nephrotoxicity is minimised by ensuring adequate hydration.
Regular, 3 times a week, monitoring of potassium and renal function is essential.

OR

- amphotericin B, IV, 0.7 mg/kg daily for 2 weeks

Follow with:

- fluconazole, oral, 400 mg daily for 8 weeks
Fluconazole should only be commenced when CSF is culture negative.
In patients with underlying immune suppression, fluconazole 200 mg daily should then be continued for 12 months.

Follow up is important, as relapse rates are high.

Therapeutic lumbar puncture

This should be considered as the intracranial pressure is often elevated with a communicating hydrocephalus.
See Section 10.1.2 Cryptococcosis

14.6.2 VIRAL MENINGOENCEPHALITIS

A86

DESCRIPTION

Patients present with headache, fever and mild meningism. Lumbar puncture typically shows mildly elevated protein, normal glucose and mildly raised cells (< 500), mainly lymphocytes (early on polymorphs may predominate). Most cases do not require specific therapy, other than analgesia.

HERPES SIMPLEX ENCEPHALITIS

Clinical features are fever, change in behaviour and seizures, either focal or generalised. Evidence of mucocutaneous involvement is not usually present. Lumbar puncture shows the features above, but may additionally be haemorrhagic in nature. Diagnosis is made on the basis of the above features, particularly if temporal focus is shown on neurological imaging or EEG. HSV PCR on CSF is diagnostic.

DRUG TREATMENT

Analgesia, i.e.:

- paracetamol, oral, 1 g 6 hourly

AND/OR

- ibuprofen, oral, 800 mg immediately, then 400 mg 8 hourly thereafter

AND/OR

- morphine, IV, 1–2 mg/minute to a maximum total dose of 10 mg
Dilute 10 mg up to 10 mL in sodium chloride solution 0.9%.
This may be repeated 4 hourly.
Beware of respiratory depression in patients with reduced level of consciousness.

HERPES SIMPLEX ENCEPHALITIS

- aciclovir, IV, 10 mg/kg 8 hourly for 21 days
Start therapy as early as possible, i.e. before results are available.
If PCR is negative, stop treatment. Despite this, patients may frequently be left with neurological sequelae.



CHAPTER 14

NEUROLOGICAL DISORDERS

Treat seizures appropriately with phenytoin/carbamazepine. See Section 14.4: Epilepsy. It is important to initiate therapy and then refer to centre where neuro-imaging or EEG is available.

REFERRAL

- patients not responding or worsening in condition, i.e. decrease in consciousness and cranial nerve palsies, despite appropriate therapy for neuro-imaging
This especially in cases of tuberculous meningitis, who may develop hydrocephalus and require an urgent shunting procedure.
- patients with shunts

14.6.3 MENINGOVASCULAR SYPHILIS

A52.1

DIAGNOSIS

Lumbar puncture typically shows lymphocytosis with combination of positive RPR/FTA-absorption on CSF.

RPR in CSF is usually of low titre, and may be negative. Elevated IgG index may be helpful. Negative blood FTA excludes the diagnosis of neurosyphilis.

DRUG TREATMENT

- benzylpenicillin (Penicillin G), 20 million units daily in 4–6 divided doses for 10 days

Penicillin allergy:

Consider desensitisation at a referral centre.

14.6.4 BRAIN ABSCESS

A06.6

DIAGNOSIS

Patient may present with focal neurological signs and signs of infection. Neurological signs may not always be prominent. Neuro-imaging usually confirms diagnosis. Patients may have concomitant infection of ears, paranasal sinuses or lower respiratory tract.

DRUG TREATMENT

Empiric antibiotic therapy

- ceftriaxone, IV, 2 g 12 hourly
OR
cefotaxime, IV, 2 g 8 hourly

PLUS

- metronidazole, oral, 400 mg 8 hourly
OR
metronidazole, IV, 500 mg 8 hourly

Adjust according to sensitivity after surgical drainage.

REFERRAL

- all as patients require urgent neurosurgery opinion and treatment

14.6.5 ANTIMICROBIAL PROPHYLAXIS IN PATIENTS WITH HEAD INJURIES

S06.00

DRUG TREATMENT**BASAL SKULL FRACTURES**

Antibiotic prophylaxis is not indicated.

PENETRATING BRAIN INJURIES

Antibiotics are given for therapy.

3rd generation cephalosporin, e.g.:

- ceftriaxone, IV, 2 g 12 hourly

14.6.6 NEUROCYSTICERCOSIS

B69.0

DIAGNOSIS

Patients may present with seizures and/or focal neurological deficit. Typical cystic lesions are seen on neuro-imaging.

NON-DRUG TREATMENT

Health education.

Surgery for treatable ventricular blockage or spinal or intraocular cysts.

DRUG TREATMENT

For active or viable cysts only:

- albendazole, oral, twice daily for 8 days
 - > 60 kg: 400 mg
 - < 60 kg: 7.5 mg/kg to a maximum of 800 mg daily
- Do not use in pregnancy.

Progressive recovery may occur for a period of up to one year. The presence of viable cysts does not require repeating antihelminthic treatment.

Drug-induced damage to cysticerci may precipitate an acute inflammatory reaction, of which the intensity is related to the number of viable cysts and may cause cerebral oedema. This reaction is minimised by adding corticosteroids to the antihelminthic treatment, e.g.:

- dexamethasone, oral 8 mg daily for 8 days in divided doses

OR

- betamethasone, oral 8 mg daily for 8 days in divided doses

Anticonvulsants, if required.

See Section 14.4: Epilepsy

14.7 MOVEMENT DISORDERS

G25.9

DESCRIPTION

Abnormalities of movement/initiation of movement, divided into those with lack of movement (hypokinesia or bradykinesia), or those with excessive movements (hyperkinesia).

REFERRAL

- to differentiate functional from organic disorders
- tardive dyskinesia
- all complicated cases, i.e. patients with Parkinsonism, not responding to small doses of carbidopa/levodopa
- patients with Parkinsonism developing disease-, drug- or autonomic nervous system complications.
- patients with Myoclonus or Chorea, not responding to therapy

14.7.1 PARKINSONISM

G20

DESCRIPTION

Parkinsonism is a syndrome characterised by tremor, rigidity, bradykinesia and postural disturbances. It may be primary, i.e. Parkinson's disease, or secondary, i.e. drug-induced.

TREATMENT OBJECTIVES

Minimise disabling symptoms.
Prevent complications and avoid serious drug-induced side effects.
To exclude secondary forms.

NON-DRUG TREATMENT

Educate the patient.
General supportive therapy and advice about lifestyle modification, physiotherapy and occupational therapy.

DRUG TREATMENT**Note:**

Set therapeutic targets so that the patient is not overtreated.

Predominant tremors

Anticholinergics, e.g.:

- trihexyphenidyl, oral, 1–2 mg daily
Start with the lowest dose and titrate upwards.
Maximum dose: 15 mg/day in 3–4 divided doses.

Bradykinesia, rigidity and postural disturbance

- carbidopa/levodopa 25/100 mg, oral, 1 tablet 3 times daily. Specialist initiated. Increase by 1 tablet every 1–2 days until the desired response is achieved or maximum dose of 8 tablets per day is reached.

If optimal control has not been achieved, consider an alternative diagnosis or changing to a drug containing a higher dose of levodopa.

OR

carbidopa/levodopa 25/250 mg, oral, ½ tablet 3 times daily. Specialist initiated. Increase by ½ tablet every 1–2 days until the desired effect is achieved or a maximum dose of 8 tablets per day is reached.

Dopamine agonists, e.g.:

- bromocriptine, oral, 1.25 mg daily for 1 week. Specialist initiated. Increase according to response:
 - week 2: 2.5 mg daily
 - week 3: 2.5 mg twice daily
 - week 4: 2.5 mg 3 times daily
 - week 5: 5 mg 3 times daily

Drug-induced extrapyramidal syndrome

Anticholinergic agent, e.g.:

- trihexyphenidyl, oral, 1–2 mg daily
Increase to 6–10 mg daily.

Acute dystonic reaction

Usually follows administration of dopamine-antagonistic drug, e.g. metoclopramide and phenothiazines.

Anticholinergic agent, e.g.:

- biperiden, IM/IV, 2 mg
Repeat as necessary.

REFERRAL

- no improvement with treatment
- increasing on/off phenomenon

14.7.2 ESSENTIAL TREMOR

G25.0

NON-DRUG TREATMENT

Rule out and manage alternate conditions, such as drugs, thyrotoxicosis, hyperadrenergic states and psychiatric disorders. Occasionally a patient may present with essential tremor and an additional neurological condition, which may make the diagnosis difficult.

DRUG TREATMENT

If tremor is severe and interfering with normal daily activity:

β-blocker, e.g.:

- atenolol, oral, 50–100 mg daily

14.7.3 MYOCLONUS

G25.3

DESCRIPTION

Irregular, involuntary movements due to muscle jerks, which may be due to myoclonic seizures, but may follow injuries to brain and thus not always of ictal nature.

REFERRAL

- all patients

14.7.4 CHOREA

G25.5

DESCRIPTION

Involuntary random, irregular movements.

Aetiology is classified as:

- primary – Huntington's chorea, benign hereditary chorea and others, or
- secondary – due to Sydenham's chorea, vascular pathology, metabolic, endocrine and infective conditions, amongst others.

DRUG TREATMENT

To be prescribed by a specialist only.

- haloperidol, oral, 0.5–5 mg 2–3 times daily

OR

sodium valproate, oral, 500 mg daily

Maximum dose: 2 500 mg daily in divided doses.

14.8 NEUROPATHY

G62

DESCRIPTION

Defective functioning of nerves, which may involve both peripheral nerves (peripheral neuropathy) and cranial nerves. Different patterns are noted, i.e. polyneuropathy, mononeuritis multiplex and mononeuropathy, each which may be caused by axonal degeneration or demyelination or a combination of the above. Clinical features may be predominantly of a sensory, sensorimotor or motor nature.

Important causes of neuropathy include chronic inflammatory demyelinating polyradiculoneuropathy (CIDP). This should be referred for assessment.

NON-DRUG TREATMENT

Observe rate of progression.

If the disease is progressing fairly rapidly, i.e. deterioration noted over 7 days or less, admit and monitor ventilatory status carefully with spirometry, as intubation and ventilatory support may be required.

Remove the cause where possible, i.e. drug-induced, alcohol, control of diabetes.

Specialised nursing care and dedicated physiotherapy may be indicated.

Chronic cases may develop contractures, weakness affecting gait, become wheel chair-bound and develop chronic bedsores if not managed appropriately.

DRUG TREATMENT

Most cases respond to management of the underlying disease process or removal of the aetiological agent.

NEUROPATHIC PAIN

- amitriptyline, oral, 25–75 mg daily
- OR**
- carbamazepine, oral, 200–1 200 mg daily in divided doses

ISONIAZID-INDUCED POLYNEUROPATHY

- pyridoxine, oral, 75 mg daily for 3 weeks, followed by 25–50 mg daily

POST-HERPES ZOSTER NEUROPATHY**Note:**

Aciclovir has not been shown to be beneficial in treating this condition.

- amitriptyline, oral, 25–75 mg daily

AND/OR

- carbamazepine, oral 200–1 200 mg daily dose in divided doses

BELLS' PALSY

There is insufficient evidence on the efficacy of either corticosteroids or aciclovir.

WERNICKES' SYNDROME

- thiamine, IM, 100 mg
- OR**
- thiamine, IV, 100 mg in 1 L fluid
- Follow with oral.
- Other nutritional deficiencies are commonly associated and should be treated.

ACUTE PORPHYRIA ATTACK**Mild abdominal pain**

- paracetamol, oral, 1 g 6 hourly

Severe abdominal pain

Opiates, i.e.:

- morphine, IV, 10–15 mg 4 hourly as required

Nausea and vomiting

- metoclopramide, oral/IM/IV, 10 mg and maintain adequate fluid balance

Tachycardia and hypertension

First correct hypovolaemia, if present, then consider β -blockade.

Seizures

- clonazepam, IV, 1 mg slowly
Repeat as required.
Observe patient for progressive neuropathy as in Gullain Barré Syndrome.

ANTI-RETROVIRAL AGENT INDUCED PERIPHERAL NEUROPATHY

Most commonly due to stavudine or didanosine, especially if also receiving isoniazid. Where appropriate/indicated, consider replacing:

- stavudine with zidovudine
- didanosine with lamivudine.

Without changing the ARV regimen, many cases respond to:

- amitriptyline, oral, 25–75 mg daily

HIV ASSOCIATED NEUROPATHY

This occurs in advanced cases and does not improve significantly on antiretroviral therapy.

Manage neuropathic pain as above.

REFERRAL

- electrophysiological studies may be needed in the diagnostic assessment, although many common causes do not warrant specialist investigations, e.g. polyneuropathies due to diabetes mellitus, HIV, isoniazid, hydralazine, dapsone, antiretrovirals (stavudine and didanosine), amiodarone and alcohol. These cases may initially be managed locally, with referral of non-responding or atypical cases.
- Gullain Barré Syndrome: referral criteria are progressive, extensive paralysis with impending respiratory failure, bulbar palsy and swallowing problems, aspiration, as well as for diagnostic confirmation

14.9 ACUTE MYELOPATHY

G99.2*

DESCRIPTION

Patients present with a sudden onset of flaccid paraparesis, with associated sensory loss, i.e. a sensory level may be present. There are numerous causes and it is important to exclude neoplastic and infectious conditions, i.e. granulomas and abscesses, causing external compression of the spinal cord. Incontinence and autonomic instability may be present.

Lesions, such as intervertebral disk prolapse, and mass lesions below the spinal cord (L1) may present with Cauda equina syndrome. These cases usually have asymmetrical weakness. Incontinence is a marker of severity.

REFERRAL

- all patients for urgent imaging



CHAPTER 14

NEUROLOGICAL DISORDERS

14.10 MULTIPLE SCLEROSIS

G35

DESCRIPTION

A demyelinating disease of the central nervous system, characterised by episodic episodes of unifocal or multifocal neurological dysfunction. Diagnosis is confirmed by imaging, the CSF may show oligoclonal bands and raised IgG index. Recovery between acute flares of illness is common, although a general stepwise degeneration in baseline is usually found.

REFERRAL

- all patients

14.11 OEDEMA, CEREBRAL

G93.6

DESCRIPTION

Swelling of brain parenchymal tissue, due to vasogenic, cytotoxic and osmotic causes. Only the vasogenic causes, such as brain tumours and inflammation, respond to corticosteroids. Consider mannitol for brain oedema in traumatic brain injury causing raised intracranial pressure, pending neurosurgical intervention. Brain oedema following stroke does not respond favourably to drug treatment.

14.11.1 BRAIN OEDEMA DUE TO TUMOURS AND INFLAMMATION

NON DRUG TREATMENT

Supportive management. See Section 14.1.1: Stroke.

DRUG TREATMENT

Treat the underlying cause. This is especially important with brain oedema associated with systemic conditions, such as electrolyte disturbances and organ failure. Patients with primary brain tumours or brain metastases should be considered for specific treatment of the tumour, which includes surgery and/or radiotherapy.

- dexamethasone, IV, 4 mg 6 hourly, initially

OR

betamethasone, oral/IV, 4 mg 6 hourly

Discontinue if no response has occurred after 48 hours.

Taper dose according to response and duration of therapy.



CHAPTER 14

NEUROLOGICAL DISORDERS

14.11.2 BRAIN OEDEMA DUE TO TRAUMATIC INJURY

S06.1

NON DRUG TREATMENT

Refer patient for neurosurgical opinion, if indicated.
Supportive management. See Section 14.1.1: Stroke.

DRUG TREATMENT

For raised intracranial pressure, pending neurosurgical procedure only:

- mannitol 15–25%, IV, 0.25–1 g/kg administered over 30–60 minutes
Monitor neurological response and urine output.

Do not repeat more than 6–8 hourly.

Beware of hypovolaemia and electrolyte disturbances, especially hypokalaemia.



CHAPTER 15 PSYCHIATRIC DISORDERS

15.1 BIPOLAR DISORDER

F31.9

DESCRIPTION

Bipolar disorder is a lifelong illness, which may have an episodic, variable course. The presenting episode may be manic, hypomanic, mixed or depressive. By definition, a diagnosis of bipolar disorder requires either a current or previous episode of mania.

An episode of mania is typically characterised by an elevated mood whereby a patient may experience extreme happiness which might also be associated with an underlying irritability. Such mood may be associated with increased energy/activity, talkativeness and a reduction in the need for sleep and features may be accompanied by grandiose and/or religious delusions. Bipolar disorder causes substantial psychosocial morbidity, frequently affecting patients' relationships within the family as well as their occupation and other aspects of their lives. Even during periods of relative euthymia, i.e. without either clearly manic or depressive features, patients may experience impairments in psychosocial functioning.

NON-DRUG TREATMENT

Hospitalisation may be required during acute mania.

Psychotherapy, usually after the manic episode has been controlled with medication.

Family therapy and psycho-education of patient and family to increase compliance and knowledge of the condition.

In severe cases, psychiatrist directed electroconvulsive therapy may be required.

DRUG TREATMENT

MANIC OR MIXED EPISODES

Acute management

For agitated and acutely disturbed patient:

- haloperidol, IM, 2–5 mg
This can be repeated in 60 minutes if required.
Monitor vital signs and beware of acute dystonia.

AND/OR

Benzodiazepine, repeat as necessary, to achieve containment, e.g.:

- clonazepam, IM, 2 mg
OR
lorazepam, IM, 2 mg
OR
diazepam, IV, 10 mg

Switch to oral once containment is achieved.

CAUTION

Benzodiazepines, especially diazepam IV, can cause respiratory depression. Monitor patients closely as benzodiazepines can exacerbate an abnormal mental state or mask important neurological signs of deterioration.

Note:

The safest route of administration is oral followed by IM with the IV route having the highest risk of respiratory depression and arrest. Use the safest route wherever possible.

Monitor vital signs closely during and after administration.

Use haloperidol in patients with respiratory insufficiency.

In the short-term, benzodiazepines can aggravate delirium.

Maintenance therapy

Indicated where/once the patient is cooperative.

Lithium is the treatment of choice. The full therapeutic effect may require days to weeks. Check renal and thyroid function prior to initiating lithium therapy.

- lithium, oral, 5 mg/kg 12 hourly

Dose range: 400–1 200 mg/day given 12 hourly.

Monitor trough (predose) plasma levels after 5 days.

Therapeutic plasma level: 0.4–0.8 mmol/L.

Where required uptitrate the dose by 5 mg/kg and repeat trough plasma levels after 5 days. Maintain therapeutic blood levels of lithium for as long as the patient is on lithium. Initially, repeat lithium blood levels at least monthly. Monitor lithium blood levels at 3 monthly intervals once stable levels have been achieved. The **toxic** blood levels and therapeutic drug levels of lithium does not differ greatly, and patients should therefore be closely monitored.

OR

Under specific circumstances such as, past or family history of response and rapid cycling, i.e. moving between mood states:

- sodium valproate, oral, 20 mg/kg/day in 2–3 divided doses

Consider oral haloperidol with adjunctive benzodiazepines in patients who are difficult to manage, i.e. not settling with mood stabiliser monotherapy, and especially where there are features of psychosis.

DEPRESSIVE EPISODES IN BIPOLAR PATIENTS**First line**

- lithium, oral, 5 mg/kg 12 hourly

Time of onset: 6–8 weeks.

Second line**ADD**

- fluoxetine, oral. In consultation with psychiatrist.

Note:

Do not use monotherapy antidepressants in bipolar patients.

Failed second line:

- refer

MIXED EPISODE, i.e. alternating shifts in mood within an episode, or
RAPID CYCLING, i.e. at least 4 mood episodes demarcated by full remission in a 12-month period
Stop antidepressants.
Investigate for possible medical condition that may precipitate cycling, e.g. hypothyroidism or alcohol abuse.

First line

- sodium valproate, oral, 20 mg/kg/day in 2–3 divided doses

AND/OR

- carbamazepine, oral, 600–1 000 mg/day
Initial dose: 100 mg twice daily.
Uptitrate dose by 200 mg/day every 4 days to avoid adverse effects.

Maintenance therapy

Following manic episodes.
Continue either lithium or sodium valproate.
Consider stopping haloperidol and benzodiazepines (always taper).
Patients who experience subthreshold symptoms or breakthrough mood episodes (depressive symptoms) may require the addition of an antidepressant.
Treatment of major depressive episodes: See Section 15.3: Depressive Disorder, Major.

REFERRAL

In certain circumstances it may be necessary to refer patients to psychiatric services, these include:

- mixed or rapid cycling bipolar disorder
- depressive episodes in bipolar patients not responding to second line treatment
- manic episodes not responding to treatment

15.2 CONFUSIONAL STATES/DELIRIUM

F03

DESCRIPTION

Confusional states/delirium are characterised by altered consciousness, accompanied by impairments in orientation to time and place and seldom to person. Such presentations may fluctuate and be accompanied by disturbed behaviour, e.g. agitation/stuporose as well as experiencing of visual/tactile or gustatory hallucinations and even paranoid ideation. The onset will present as a significant change in the patient's mental state.

Note:

Many acute medical emergencies can present as delirium or apparent acute psychosis.

NON-DRUG TREATMENT

Hospitalisation is mandatory for physical and environmental support.

Control the acute disturbance.

Laboratory testing/medical investigations where indicated i.e. to exclude/diagnose underlying medical problem which is the primary management where delirium has been diagnosed.

DRUG TREATMENT

Treat medical condition if present.

Acute management

For agitated and acutely disturbed patient:

- haloperidol, IM, 2–5 mg
This can be repeated in 60 minutes if required.
Monitor vital signs and beware of acute dystonia and Neuroleptic Malignant Syndrome.
Dosing may vary according to clinical circumstances, e.g. lower doses with the elderly or where HIV or HIV related dementia is known or suspected.

AND/OR

Benzodiazepine, repeat as necessary, to achieve containment, e.g.:

- lorazepam, IM, 2 mg
OR
clonazepam, IM, 2 mg
OR
diazepam, IV, 10 mg

Switch to oral once containment is achieved.

CAUTION

Benzodiazepines, especially diazepam IV, can cause respiratory depression. Monitor patients closely as benzodiazepines can exacerbate an abnormal mental state or mask important neurological signs of deterioration.

Note:

The safest route of administration is oral followed by IM with the IV route having the highest risk of respiratory depression and arrest. Use the safest route wherever possible.

Monitor vital signs closely during and after administration.

Use haloperidol in patients with respiratory insufficiency.

In the short-term, benzodiazepines can aggravate delirium.

To avoid inappropriate repeat dosing allow at least 15–30 minutes for the drug to take effect.

15.3 DEPRESSIVE DISORDER, MAJOR

F32.9

DESCRIPTION

Major depression is characterised by a depressed mood (sadness) accompanied by loss of interest and decreased experiencing of pleasure as well as social withdrawal. Disturbances, i.e. reduction of sleep, appetite, energy, motivation, concentration and memory may occur. The patient may report feelings of worthlessness as well as hopelessness and thoughts of suicide. Symptoms should have been present for at least two weeks and impact on the person's ability to function normally.

NON-DRUG TREATMENT

Treatment is bio-psycho-social.

Exclude precipitating medical conditions, e.g. cerebrovascular disease or hypothyroidism.

Psychotherapy, usually cognitive-behaviour therapy.

Family therapy and psycho-education of patient and family.

Review of social factors.

Electroconvulsive therapy is indicated under specific circumstances.

DRUG TREATMENT**Antidepressant therapy**

All antidepressants take 4–6 weeks to achieve their maximum effect. In some patients an initial response may be experienced within the first 1–2 weeks.

There is little evidence to support combination drug treatments.

Tricyclic Antidepressants (TCA) and Selective Serotonin Reuptake Inhibitors (SSRI) are of equal efficacy.

The choice of therapy is guided by comorbid states, e.g. cardiovascular disease and in the elderly. In patients with CV disease, avoid TCA and in the elderly caution with TCA and SSRI.

Following remission continue the pharmacotherapy for at least another 6 months. Thereafter, review the need for ongoing therapy. When discontinuing the medication, taper off slowly to avoid discontinuation symptoms. If there is a recurrence, reinstitute the continuation medication at the same dose.

Patients with 3 or more episodes may require maintenance pharmacotherapy to be reviewed every 2 years.

Adolescents with depression should only be treated by a specialist due to the increase risk of suicide ideation when treated with SSRIs.

MAJOR DEPRESSIVE DISORDER**First line**

Tricyclic antidepressants, e.g.:

- amitriptyline, oral, at bedtime
Initial dose: 25 mg, increase by 25 mg/day at 3–4 day intervals.
Maximum dose: 150 mg/day.
Doses in excess of 150 mg: consult a psychiatrist.

OR

- imipramine, oral, at bedtime. Specialist initiated.
Initial dose: 25 mg, increase by 25 mg/day at 3–4 day intervals.
Maximum dose: 150 mg/day.
Doses in excess of 150 mg: consult a psychiatrist.

OR

Selective serotonin reuptake inhibitors:

- fluoxetine, oral
Initial dose: 20 mg
If there is no or partial response after 4–8 weeks, increase to 40 mg, if well tolerated.

OR

- citalopram, oral, 20–40 mg daily. Specialist initiated.

If a sedating antidepressant is required or TCAs cannot be used:

- mianserin, oral, 10 mg at night. Specialist initiated.
Increase incrementally by 10 mg every seven days to a maximum of 60 mg.

Second Line

If on an SSRI change to the other SSRI or a TCA.

If on a TCA change to a SSRI.

If initially on fluoxetine, wait for seven days before starting with citalopram after stopping fluoxetine.

REFERRAL

- no response to treatment

15.4 DYSTHYMIC DISORDER

F34.1

DESCRIPTION

This condition presents with a depressed mood present for most of the time for at least two years and tends to be chronic. Symptomatically it is similar to major depression but the presentation does not fulfill the diagnostic criteria. In addition, the depressed mood is continuous rather than episodic. Always consider the possibility of an undiagnosed major depressive disorder as well as substance related conditions.

NON DRUG TREATMENT

As for Major Depressive Disorder.

DRUG TREATMENT

As for Major Depressive Disorder.