Chapter 27

Management of Clinical Conditions in Children

Authors
Henry Barigye

Vanessa Adams
Paul Roux
Seggane Musisi

At a Glance

Overview

While HIV can affect any organ of the body, skin diseases, malnutrition, diarrhoea, respiratory tract diseases, and fevers are the major causes of symptoms, distress, and mortality in children. This chapter describes the clinical management of the common clinical conditions of HIV disease in children. See also the adult chapters in Part 2 (Clinical Supportive Care) for more on specific clinical conditions.

Chapter 28: Integration of Palliative Care with ART in Children describes the treatment of HIV disease itself with antiretroviral therapy (ART).

Paediatric malignancies are not addressed in this book. Kaposi's sarcoma, non-Hodgkin's lymphoma (NHL), and leiomyosarcomas are the most common malignancies in children with HIV. Prolonged intensive chemotherapy is poorly tolerated by children with HIV/AIDS, but short, dose-intensive regimens are likely to have a better outcome. Kaposi's sarcoma is reported to improve on ART.

Adapted from Chapter 12: The care of Children and Adolescents, by Nancy Hutton, MD, in: O'Neill JF, Selwyn PA, Schietinger H, eds. *A Clinical Guide to Supportive and Palliative Care for HIV/AIDS, 2003 Edition*.

Published 2006

Chapter 27

Management of Clinical Conditions in Children

Table of Contents

Published 2006

General Principles of Clinical Management

General principles for managing common conditions in children with HIV include:

- Treatment of reversible conditions
- Palliation of symptoms
- Relief of distress for both the parents and children

These three components are all considered essential in the palliative care assessment and management of children with HIV. The relative importance of each component may differ depending on the aetiology of disease and stage of infection. Acute *Pneumocyctis carinii* pneumonia (PCP) and lymphoid interstitial pneumonitis (LIP) may both present with cough and dyspnoea, but PCP requires immediate initiation of specific therapy whereas LIP requires long-standing palliation of symptoms. On the other hand, warts (verruca plana), a skin disease with no specific therapy, requires counselling of caregivers and children so as to mitigate against the distress it causes.

Treatment of specific conditions requires knowledge of the possible aetiology and organism susceptibility to treatment. In resource-limited countries laboratory investigations are not always available and diagnosis may not be confirmed. In such settings, important considerations include the age of the child, presenting clinical signs and symptoms, whether the complaints are acute or chronic, whether the disease is suspected or confirmed, and the stage of the disease. Because it is difficult to exhaust all the causes of disease in children infected with HIV, health care workers (HCWs) evaluating them need to consider both the common and rare cause of symptoms.

Pain

See Chapter 4: Pain Management for a more complete discussion of the assessment and management of pain.

Assessment

It is important to state first and foremost that children suffer from pain. This might seem obvious to many but it is surprising how many HCWs practice as if children never suffer from pain.

Assessment of pain is an essential part of paediatric consultation and requires a careful history as well as close observation (see Box 27.1). As with adults, the gold standard for pain assessment is self-report. Younger children will depend on caregivers for pain assessment. A HCW may assess that a child showing signs of irritability is experiencing pain. The severity of pain may be assessed using numeric scales for older children (older than seven years) and non-numeric scales (e.g., visual analogues, for children 3-7 years). The charts and scales for pain assessment in Chapter 4 can be used with children.

Published 2006

Box 27.1:

Recognizing Pain in Children

Brief Pain:

- Crying
- Distressed facial expression

Persistent Pain:

- Irritability
- Not wanting to move
- Lack of interest
- Decreased ability to concentrate
- Sleeping problems
- Changes in how the child moves
- Restlessness
- Increased breathing rate or heart rate

Source: WHO, 2004.

Management

Treating Reversible Causes

Managing pain involves identifying and treating any reversible causes of pain (e.g., infections responsive to antibiotic therapy). Specific pain management should complement curative therapies until the underlying problem is resolved and is no longer causing pain.

Painful procedures need to be evaluated for their relevance and avoided if not needed. Children often suffer from pain as a result of multiple procedures, including pricks for blood smears, venipunctures for blood draws, and lumbar punctures. Many children also receive medications by intramuscular injections because there is a common belief in the general public that injections work better than oral medications. It is not uncommon in malaria endemic regions for a malaria blood smear to be done on a child with fever and then for the child to be treated empirically even when the smear is negative.

Non-Pharmacologic Management

Non-pharmacological approaches can be used even in resource-limited settings, especially for procedure-associated pain:

- Distraction (radio, music)
- Relaxation (imagining a pleasant scene)
- Breathing techniques (slow, deep breathing)
- Touch (stroking, massage, rocking, vibration)
- Cold or heat (a damp cloth)

In managing pain it is important to assess and treat the whole child. Problems in various aspects of life (social, psychological, spiritual) may compound pain. Addressing these issues may also help relieve a child's pain:

- Support and counselling
- Information (answering questions and explaining what is happening)

Pharmacologic Management

Many pains, especially in advanced disease, elude clear delineation of aetiology or are due to conditions for which there is no effective therapy. In these circumstances, specific pain management is the pre-eminent therapy.

HCWs need to be comfortable with the use of analgesics and understand the mechanisms of action, dosing options, potential for synergistic effects, side effects, and toxicities. Having a few basic medicines goes a long way toward relieving a child's pain (see Table 27.1).

Table 27.1: Medicines Used in Managing Pain in Children

Name of the Drug	Dosage in Children
Ibuprofen	5–10 mg/kg 6–8 hourly
Paracetamol	10–15 mg/kg 4–6 hourly
Codeine	0.5–1 mg/kg 4 hourly
Amitriptyline	0.2–0.5 mg/kg 12 hourly
Carbamazepine	2.5–5 mg/kg 12 hourly
Phenytoin	2.5–10 mg/kg 12 hourly
Sodium valproate	7.5–20 mg/kg 12 hourly
Morphine	0.15–0.3 mg/kg 4 hourly

Published 2006

Constitutional Symptoms

See Chapter 5: Constitutional Symptoms for more detail on assessment and management of these problems.

Wasting

Assessment

Wasting may be due to inadequate nutrition or HIV-related wasting syndrome. Inadequate nutrition may also be due to HIV-related complications such as oral/throat sores, poor appetite, diarrhoea, fevers, or actual lack of food. See Chapter 19: Nutrition. The objectives of management depend on the stage of the disease and aetiology of wasting.

Management

For inadequate nutrition:

- Treat the predisposing causes if any.
- Ensure availability of food in the home.
- Provide food in small, high-calorie, energy-dense portions frequently.
- Aim at catch-up growth.

For HIV wasting syndrome:

- Prevent further deterioration by preventing disease and providing adequate macronutrient and micronutrient supplements.
- Assist child to have a sense of well-being and to maintain age-appropriate activities.
- Give vitamin A according to IMCI guidelines.

In children who are terminally ill these objectives may be unachievable. At this stage, HCWs should help the family to provide the child with whatever he or she wants or likes rather than aiming at providing the required calories and protein.

Anorexia

Assessment

Poor appetite may be due to various causes including:

- HIV disease itself, especially when advanced
- Intercurrent disease
- Medications used for HIV disease
- Psychological problems such as depression

Management

Treat the cause of poor appetite if it can be identified.

Alternatively, stimulate the appetite using corticosteroids such as prednisone and dexamethasone or, if available, megestrol acetate.

At the end of life, caregivers need reassurance that decreased food intake will not cause death. The body has decreasing nutritional requirements as death approaches. Forcing a child to eat or drink can be uncomfortable at this time, causing choking, abdominal pain, nausea, vomiting, or diarrhoea.

Published 2006

Fatigue and Sleep Disturbance

Assessment

As with adults, fatigue and sleep disturbance are challenging symptoms of HIV disease that affect a child's quality of life.

Management

Non-Pharmacologic Symptom Management

For fatigue, promote sleep through adequate symptom control and a peaceful and comfortable environment. Offer quiet activities.

Help the family to encourage the child to play, walk outdoors, and remain awake during the day to promote sleep at night.

Instruct caregivers not to awaken the child unless he or she is taking around-the-clock pain medication.

Move as quickly as possible to long-acting analgesics.

Pharmacologic Symptom Management

Give stimulant medication (methylphenidate 0.1–0.5 mg/kg/dose) to promote arousal during the day.

Fever Treating Reversible Causes

Acute: If the fever is acute and non-localizing, consider malaria and septicaemia. If it is acute and localizing, treat as recommended for the system concerned.

Chronic: Consider tuberculosis, toxoplasmosis, cytomegalovirus disease, disseminated fungal infections, or malignancies.

Non-Pharmacologic Management

Give the child cool baths or wipe with damp cloth.

Give plenty of water and other liquids.

Pharmacologic management

Give paracetamol 15 mg/kg body weight.

Respiratory Problems

See Chapter 6: Respiratory Symptoms for generic management.

Differential Assessment to Treat Reversible Causes

Acute respiratory problems: Common causes of acute cough and or dyspnoea include bacterial pneumonia, *Pneumocystis carinii* pneumonia, malaria, and acute pyogenic pneumonia.

Chronic respiratory problems: If symptoms are chronic, consider tuberculosis, lymphoid interstitial pneumonitis (LIP), and bronchiectasis. Bronchiectasis is often a complication of LIP, asthma/reactive airways disease, and sinusitis. Also, chronic sinusitis is a largely ignored cause of persistent/recurrent cough.

Cough and Dyspnoea

Assessment

Cough and dyspnoea are the most common symptoms associated with HIV-related pulmonary conditions. While identifying and treating the underlying cause, HCWs should also manage these distressing symptoms as well as constitutional symptoms such as fever.

Published 2006

Management

Non-Pharmacologic Symptom Management

Measures to relieve the child's sensation of shortness of breath include:

- Positioning for comfort (extra pillows to raise the chest)
- Assistance with walking
- Humidified air (create steam by heating a pan of water)
- Fanning the face
- Fresh air

For cough, suggest soothing remedies such as honey and lemon, plain or with eucalyptus leaves or neem tree oil.

To loosen sputum, suggest plenty of water and other liquids.

Pharmacologic Symptom Management

Treat asthma/reactive airways disease with bronchodilators. Add corticosteroids depending on severity and frequency.

Treat the sensation of shortness of breath with:

- Opioids (systemic)

If available, consider:

- Nebulized saline or bronchodilators
- Nebulized opioids
- Oxygen

Pneumonia

Assessment

Both bacterial pneumonia and *Pneumocystis carinii* pneumonia are common in children with HIV (ANECCA, 2004). Clinical diagnosis can be based on history (fever, cough, rapid breathing, fatigue, cyanosis) and breath sounds on auscultation (decreased breath sounds, crackling/crepitations, or bronchial breathing).

Laboratory work can also be useful. Increased white blood cell count with neutrophilia (granulocytosis) suggests bacterial pneumonia.

If available, consider chest x-ray: Not necessary to diagnose and treat acute pneumonia, but may be useful when there is a poor response to treatment or when TB, foreign body, or tumour is suspected.

Pneumocystis carinii pneumonia (PCP) is common in children <1 year of age. Clinical presentation differs from bacterial pneumonia in the following ways:

- Low-grade or absent fever
- Marked respiratory distress (retractions or chest in-drawing, cyanosis, inability to drink)
- Clear chest or diffuse fine crepitations on auscultation
- Poor response to standard antibiotic treatment
- Occasionally, oral thrush, lymphadenopathy, and/or weight loss
- If pulse oximetry available, evidence of severe persistent hypoxia

Recurrent or persistent pneumonia (more than 3 times/yr) should alert the HCW to suspect TB, foreign body, or chronic lung disease.

Management

Treating Reversible Causes

Bacterial Pneumonia: For mild pneumonia, give oral amoxycillin or penicillin or other antibiotic recommended in national guidelines.

For patients on cotrimoxazole prophylaxis, caution should be taken in using it to treat an acute episode of pneumonia as is recommended by some countries like Uganda. Since there is currently no consensus on the matter it would be prudent to consider using other antibiotics according to national guidelines.

Published 2006

For severe pneumonia, treat in hospital or other inpatient facility in order to give supportive management (see pharmacological symptom management below) and intravenous antibiotics:

- Give antibiotic based on common organisms in the region.
- If common organisms unknown, give chloramphenicol.
- Alternatives include ampicillin/cloxacillin plus gentamicin if there is a high level of resistance to chloramphenicol in the region.
- If available, cephalosporins can be used if there is a high level of resistance to chloramphenicol in the region.

***Pneumocystis carinii* pneumonia (PCP):** If PCP is suspected, continue to treat for bacterial pneumonia, but also treat for PCP:

- Add high-dose cotrimoxazole (CTZ) PO or, if available, IV.
- After treatment, give PCP prophylaxis life-long (see Table 26.4).

Non-Pharmacologic Symptom Management

See section on cough and dyspnoea.
Provide adequate oral hydration.

Pharmacologic Symptom Management

Give vitamin A supplementation if child has not received in last 3 months. If intravenous fluids are used for hydration, use with caution to avoid fluid overload.

For severe pneumonia treated in hospital:

- Correct severe anaemia (Hb<5 g/dL) by transfusion with packed red blood cells

If available, give oxygen

For severe respiratory distress in PCP, give prednisone at 2 mg/kg/day for 7–14 days, and taper if treatment >7 days.

Tuberculosis

Assessment

Tuberculosis is a common OI amongst children with HIV/AIDS. Most frequently the child with HIV acquires TB infection from an adult with HIV in the home. Children with HIV (<5 years or who are severely immunosuppressed) in contact with TB should receive preventive therapy, regardless of whether the sputum smear is negative or positive in the index case (see Chapter 26).

Tuberculosis in a child with HIV is usually suspected in a child with one or more of the following: prolonged fever, chronic cough, contact with an active case, and weight loss. Children are often diagnosed after presenting with less specific symptoms and an abnormal chest radiograph and not responding to treatment with antibiotics. Unusual presentations include extra-pulmonary disease with hepato-splenomegaly, lymphadenopathy, and anaemia in children with more advanced immunosuppression. It is difficult to distinguish unusual presentations of TB from advanced HIV/AIDS itself, lymphoma, deep mycosis, or infection by atypical mycobacteria.

Children with HIV and TB coinfection have a shorter life expectancy than children with HIV alone, but respond to conventional anti-tuberculous therapy both in the acute and the maintenance phase of treatment. In Uganda, based purely on the experience of clinicians, the traditional six months of treatment was increased to nine months for children who are HIV-infected. This is also recommended by the American Academy of Paediatrics (AAP, 2003).

Published 2006

Management

Acute conditions are curable and should be given specific therapy as recommended by national guidelines.

Antiretroviral, antifungal, and antituberculous drugs interact with one another — refer to Chapter 11 and Appendix 2 for further details.

Treatment for TB should be commenced two months prior to starting ART to avoid the immune reactivation syndrome which results in an exacerbation of the clinical features of tuberculous co-infection (see Chapter 28: Integration of Palliative Care With ART in Children).

Lymphoid Interstitial Pneumonitis

Assessment

Children with HIV most often acquire lymphoid interstitial pneumonitis (LIP) at 2 or 3 years of age.

The diagnosis is generally made on clinical and radiological findings:

- Respiratory distress (hard breathing and cough)
- Failure to thrive
- Finger clubbing
- Parotid gland enlargement
- Prominent generalized lymphadenopathy

If available: Radiological lung infiltrates on X-ray

Acute lower respiratory tract infections occur more frequently with LIP. This finding confounds the analysis of symptoms associated with LIP and contributes to an understanding of the aetiology of both bronchiectasis and cor pulmonale associated with LIP. Children with LIP may die from progressive pulmonary fibrosis, cor pulmonale, or cardiac failure.

The classical chest radiograph in LIP has bilateral, predominantly lower zone reticular or reticulo-nodular opacities. While this pattern is also seen in miliary TB and cytomegalovirus pneumonia, in LIP it is indolent and non-responsive to standard therapy. In children a resolution of this infiltrate has been correlated with a declining CD4 count and advancing immunosuppression, although this association is not absolute.

Management

Non-Pharmacologic Symptom Management

Train caregivers to give daily chest physiotherapy and postural drainage.

See section on cough and dyspnoea for supportive care.

Pharmacologic Symptom Management

Resolution of the pulmonary infiltrate has been observed in response to glucocorticoids as well as ART.

- Glucocorticoids: Pulsed steroid (2 mg/kg for 7 days, tailed to 5 mg/day over a month) offers appropriate palliative therapy for symptomatic LIP (significant hypoxemia, tachypnoea, or dyspnoea on exertion).
- Give bronchodilators for wheezing

If available, consider:

- ART: Triple therapy is the most appropriate and effective treatment, although single and multiple regimens are used.
- Oxygen for hypoxia

Bronchiectasis

Assessment

Pulmonary disease in children with AIDS frequently involves bronchiectasis, especially in the presence of LIP, recurrent or unresolved pneumonia, and CD4 counts <100. Chronic lung disease generally emerges in children who, because of intensive and comprehensive management, survive for longer periods of time.

Published 2006

The diagnosis of bronchiectasis in children is suggested by:

- History of recurrent, febrile, productive lower respiratory tract infections
- Recurrent signs of lower respiratory tract consolidation
- Finger clubbing

Recurrent infections and increased work of breathing contribute to failure to thrive. Plain chest radiography is not the gold standard for diagnosing bronchiectasis, but recurrent consolidation in the same anatomical distribution sometimes associated with lobar or segmental collapse is suggestive, in the presence of the other features mentioned above.

Management

Non-Pharmacologic Symptom Management

Children benefit from daily vigorous physiotherapy with dependent drainage if damage is focused in a particular anatomical area. Train caregivers in these techniques.

See section on cough and dyspnoea for supportive care.

Pharmacologic Symptom Management

Give bronchodilators for bronchospasm.

Give antibiotics to treat acute bacterial super-infection of lower respiratory tract disease, rotating antibiotic regimen as prophylaxis against progression of bronchietasis-related lung damage. Use care when treating chronic lung disease with antibiotics. Frequent antibiotic use for respiratory signs and symptoms that do not resolve could result in selection for antibiotic resistant pathogens. This is particularly likely when X-rays are unavailable and diagnosis cannot be made with precision.

Bronchiectatic change in HIV/AIDS is generally diffuse and not amenable to surgery. Where it is localised, surgery may be appropriate.

Cor Pulmonale

Assessment

Cor pulmonale is hypertrophy of the right ventricle resulting from disease affecting the function and/or structure of the lung — excepting causes related to primary left ventricular or congenital heart disease. In children with HIV/AIDS, right ventricular hypertrophy is associated with recurrent pulmonary infections and is observed in children with bronchiectasis and/or LIP. Chronic hypoxia caused by interstitial pneumonitis or parenchymal lung disease is likely to play a part in the pathogenesis of cor pulmonale.

Management

Pharmacologic Symptom Management

Drugs for heart failure are appropriate for palliative care:

- Diuretics
- Digoxin

If available, consider:

- Oxygen therapy benefits patients with chronic lung disease greatly.

ART provides unexpected and gratifying benefits in cardiac function. On ART, children with cor pulmonale have fewer episodes of intercurrent lower respiratory tract infections and fewer episodes of infection with associated increase in metabolic rate.

Published 2006

Draining Ears

Assessment

Otitis media can be acute (lasting less than 14 days) or chronic (may be associated with continued ear drainage and a perforated eardrum). This is one of the most common HIV-related infections in children. Symptoms of acute otitis media involve drainage from the ear and ear pain, exhibited by pulling on the ears, crying, and irritability.

Management

Treating Reversible Causes

Treat acute ear infection with antibiotics.

If available, consider ART, which usually resolves otitis media.

Non-Pharmacologic Symptom Management

Emphasize toilet: ear wicking 8 hourly when there is discharge.

Teach caregivers how to do toilet. Explain to the parents and older children that otitis media often re-occurs.

Diarrhoea

See Chapter 7: Gastrointestinal Problems for more detail on assessment and management.

Assessment

Acute: Acute diarrhoea of childhood is largely considered to be viral and managed by rehydration (assess all children for dehydration and treat promptly). However for children with HIV, a high index of suspicion for other aetiologies such as *Salmonella, Shigella,* and *Giardia lamblia* that are treatable should be kept in mind especially in the following circumstances (Callahan, 1999):

- Diarrhoea with fever
- More than 5 leucocytes/hpf in stool.
- Blood in stool
- Diarrhoea without vomiting

Chronic: Consider *Cryptosporidium, Isospora belli*, lactose intolerance, medications (e.g., ARVs), and idiopathic diarrhoea.

If laboratory facilities are available, collect stool specimens for microscopy and culture and deliver them to the laboratory promptly. Repeat if they remain negative in persistent diarrhoea.

Assess the child with prolonged diarrhoea for malnutrition and investigate the malnourished child more aggressively. Obtain serum electrolytes and a full blood count because anaemia and thrombocytopaenia are relatively frequent complicating factors.

Management

Treating Reversible Causes

Where stools have been tested for microscopy and culture, treat with antimicrobials according to the lab results, using national guidelines.

Published 2006

For persistent diarrhoea with blood in the stool, presume *Shigella* and treat with an oral antibiotic effective for *Shigella*. If no improvement in 2 days, switch to another oral antibiotic effective for *Shigella*.

If stool tests are not available, treat persistent diarrhoea without blood in the stool presumptively according to national guidelines or as follows:

cotrimoxazole/nalidixic acid and metronidazole for children <8 years

ciprofloxacin and metronidazole for children ≥ 8 years

Be aware of treating for intestinal worms in a patient with acute diarrhoea as a worm bolus can result in an acute intestinal obstruction.

Non-Pharmacologic Symptom Management

The cornerstone of managing chronic diarrhoea is ensuring adequate nutrition during the disease.

Address all episodes of diarrhoea with:

Rehydration: Give parent instructions for mixing oral rehydration fluids (as in Box 27.2 for recipes for homemade oral rehydration fluids or use national guidelines) or a supply of packaged oral rehydration salts (ORS) for suspension in clean water.

Advise caregivers to return to the clinic if the child becomes drowsy or if vomiting prevents fluid retention.

Reduce lactose in diet in case of lactose intolerance.

Give skin care when diarrhoea or incontinence threaten skin integrity.

Advise family members about specific home-based interventions, including:

- Giving more fluids than usual at the onset of diarrhoea. Water, unsweetened juice, and weak tea can be used as maintenance, but should not be used for rehydration.
- Rice water and maize-based oral rehydration salts (see Box 27.2).
- Dilute maize/millet/sorghum pap.
- Encouraging children to drink as much as possible. Often they will not feel thirsty so encourage them to keep a glass nearby and take small sips every five minutes.
- Continuing breast-feeding, but more frequently than before (at least every three hours).
- Encouraging children to continue to eat. If children stop eating when they have diarrhoea this can cause malnutrition or make existing malnutrition worse.
- Preparing food such as porridge more watery than usual so the child gets both nutrition and fluids.
- Giving small amounts of nutritious and easily digestible food frequently.
- In severe dehydration, stopping oral feeds for four to six hours for the carer to concentrate on rehydration (50–100 mL/kg).
- After the diarrhoea has stopped, giving an extra meal each day for 2 weeks helps children to regain any weight lost during the illness.

Box 27.2:

Recipes for Oral Rehydration Fluids for Children

Oral Rehydration Solution

1. 8 tsp sugar
2. ½ level tsp salt
3. 1 litre boiled water
4. Mix well and store covered in a cool place. Make a fresh solution every day.

Rice-Based Oral Rehydration Solution

1. Fistful of dry rice grain (25g)
2. Wash and soak until soft
3. Grind to paste
4. Put 2 cups of water in pan and mix with paste
5. Heat and stir until bubbling
6. Cool and use within 6–8 hrs

Maize-Based Oral Rehydration Solution

1. Add 50g maize to 1 litre water
2. Cook for 5–8 minutes
3. Add 1 tsp salt once cooled

Published 2006

Pharmacologic Symptom Management

Vitamin A supplementation (200 000 IU every 6 months) is said to prevent or reduce the severity of diarrhoea in vitamin-deficient people and malnourished children, with or without HIV/AIDS.

Zinc supplementation (1 mg/kg/day elemental zinc) reduces the duration of acute and chronic diarrhoea.

Small doses of oral morphine solution may be useful for intractable diarrhoea.

In children with diarrhoea accompanied by signs of shock or intractable vomiting fluid replacement is critical.

If available, admit to hospital for intravenous rehydration.

For shock, give a rapid infusion of normal saline. Infuse an initial aliquot of 20 mL/kg body weight over 30 minutes. The response to adequate resuscitation is a lowering of the heart rate and the return of previously impalpable pulses. Repeat the infusion up to three times.

Introduce feeding and ORS as soon as shock has resolved.

Published 2006

Skin Problems

See Chapter 9: Skin and Wound Care for more detail on assessment and management of these problems.

Assessment

The common dermatological conditions include bacterial infections, dermatophytosis, scabies, molluscum contagiosum, warts (verruca plana), non-specific dermatitis, drug reactions, and herpetic sores. Scabies in children with HIV/AIDS may have atypical presentation and should be suspected in any child with pruritic lesions. Varicella (chicken pox) may be fatal. Herpes zoster (shingles) causes severe pain and carries a high mortality rate in severely immunocompromised patients. Severely immunosuppressed children may have extensive mucocutaneous disease with persistent vesicle formation.

Management

Non-Pharmacologic Symptom Management

Bathing, moisturizing, and massage all promote skin integrity and prevent skin breakdown.

If child is bedbound, cushion the pressure points and change his or her position frequently to prevent pressure sores.

Pharmacologic Symptom Management

Use antipruritic medications for itching (hydroxyzine, diphenhydramine).

Non-specific dermatitis may improve on ART. However, warts (verucca plana) and molluscum contagiosum, which rarely or poorly improve on therapy including ART, may require intensive counselling for caregivers and children.

Fungal infections, scabies, and herpetic sores need specific therapy.

For chicken pox: Symptomatic treatment with topical calamine lotion is marginally effective. For disseminated chicken pox with complications (e.g., organ system involvement, pneumonia):

aciclovir 20 mg/kg PO 4 or 5 times daily for 21 days

or, if available,

aciclovir 20 mg/kg (up to 800 mg) IV 5 times daily for 7 days

For herpes zoster (shingles): Give analgesia 'by-the-ladder and 'by-the-clock', beginning with a paracetamol and codeine combination 6 hourly (see Chapter 4: Pain Management).

Apply a soothing topical antibacterial cream or calamine lotion.

Post-herpetic neuralgia: amitriptyline 0.25–0.5 mg/kg PO nocté or 12 hourly

Give aciclovir as for chicken pox. With shingles, the best response is obtained by starting aciclovir within 72 hours of the onset of symptoms.

Published 2006

Neurologic Problems

See Chapter 10: Neuro-psychiatric Problems for more on these clinical issues.

Differential assessment

Neurological impairment is common among children with HIV infection and often takes the form of a progressive encephalopathy. Neurological manifestations are characterized by developmental delays or loss of motor milestones with associated mental abnormalities, stunted growth and development, mental retardation, or even dementia. Children with HIV infection are at risk of secondary infection of the central nervous system resulting in meningitis, seizures, stroke, and delirium. However, most of the neurological findings are as a result of the direct effect of HIV on the brain.

Children with HIV/AIDS often experience developmental delays and delays in the acquisition of skills. Whilst this may arise out of the direct effect of HIV infection of the brain, failure to acquire skills may also arise indirectly as a result of reasons such as malnutrition, lack of stimulation from ill parents, repeated absences from school resulting from the child's illnesses, or the effects of social stigma. Chapter 29: Psychosocial and Spiritual Care addresses ways to provide children with stimulation.

Dementia is rare in younger children with HIV, but appears in adolescents in advanced HIV disease. A study of adolescents with HIV in Uganda identified dementia manifesting as global cognitive impairment but with significant memory deficits and inability to learn new material (Musisi, 2003). See Chapter 10: Neuro-psychiatric Problems for more on dementia.

Delirium and Seizures

Assessment

Common causes of seizures include meningitis (cryptococcal or bacterial) and toxoplasmosis that can be treated with specific therapy (see below). The occurrence of delirium and/or seizures is an ominous sign denoting a medical emergency which needs urgent medical attention, and admission to hospital to find and treat the underlying cause aggressively.

Management

Treating Reversible Causes

If possible, find and treat the underlying cause of the delirium or the seizure.

Pharmacologic Symptom Management

Manage seizures with diazepam 0.5 mg/kg PR or 0.1 mg/kg IV. Repeat this dose every 5–10 minutes as needed up to three times. Other anticonvulsant medications are phenobarbitone and phenytoin, clonazepam, carbamazepine, phenytoin, and sodium valproate.

Control the delirium with a neuroleptic (e.g., haloperidol) or benzodiazipine (e.g., lorazepam)

Published 2006

Meningitis

Assessment

If a child has meningitis there will be a history of vomiting, fever, inability to drink or breastfeed, severe headache or neck pain, convulsions, or irritability. The child may have a stiff neck, rigid posture, rash, lethargy, or bulging fontanelle. Signs of intracranial pressure include unequal pupils, rigid posture, focal paralysis in any of the limbs or trunk, or irregular breathing.

In malarial areas, take a blood smear to check for cerebral malaria, either as a differential diagnosis or co-existing condition.

If possible, obtain a lumbar puncture unless there are signs of raised intracranial pressure. In children with HIV, differential diagnoses include bacterial, tuberculous, and fungal infections (WHO, 2004).

Bacterial meningitis: *Streptococcus pneumonia* and *Haemophilus influenza* type b (Hib) are frequent causes of acute meningitis in children with HIV/AIDS.

Tuberculous meningitis: Tuberculous meningitis is a significantly more common cause of meningeal infections presenting with sub-acute and chronic symptoms.

Cryptococcal meningitis: *Cryptococcus neoformans* is an infrequent cause of meningitis in young children with HIV/AIDS but is common in older children and adolescents.

Management

Treating Reversible Causes

Bacterial meningitis: First-line therapy is chloramphenicol 50–100 mg/kg/day IV in 24 divided doses or a third-generation cephalosporin (e.g ceftriaxone 100 mg/kg IV or IM once a day).

Tuberculous meningitis: Isoniazid, pyrazinamide, and ethionamide penetrate the blood-brain barrier well, rifampicin less well. Ethambutol and streptomycin only penetrate in adequate concentrations in the early stages of treatment, when the meninges are inflamed. Experience suggests that 12 months of treatment with rifampicin and isoniazid together with pyrazinamide and a fourth drug (ethambutol, ethionamide, or streptomycin) for at least the first two months provides good results. Corticosteroids are recommended as adjunctive therapy in more serious cases.

Cryptococcal meningitis: Give amphotericin B 0.7–1 mg/kg/day IV for 2 weeks, followed by fluconazole 3–6 mg/kg/day for 8 weeks or until CSF is sterile. If amphotericin B is not available, fluconazole can be used initially, but has a higher rate of relapse. Fluconazole requires an induction dose especially in children (10–12 mg/kg PO or IV in 2 divided doses). Maintain prophylaxis with fluconazole unless the child is on ART and with sustained immune recovery (3–6 mg/kg/day PO or IV).

Non-Pharmacologic Symptom Management

See sections on pain, constitutional symptoms, and delerium and seizures.

If child is unconscious, educate caregiver how to maintain clear airway, nurse the child on the side to avoid aspiration of fluids, turn every 2 hours, change bedding when wet, and pay attention to pressure points (WHO, 2004)

Pharmacological Symptom Management

Address symptoms aggressively. See sections on pain, constitutional symptoms, and delirium and seizures.

Published 2006

Focal Neurologic Deficits

Assessment

Toxoplasmosis, lymphomas, and tuberculomas can cause space-occupying lesions that result in focal neurological deficits such as paralysis that look like stroke, as well as focal seizures (see section on delirium and seizures).

Management

If available, provide physiotherapy to palliate the paralysis.

Treat toxoplasmosis presumptively with specific therapy (see Chapter 10: Neuro-psychiatric Problems).

Lymphomas may require radiotherapy, *if available*.

Encephalopathy

Assessment

Encephalopathy commonly manifests in children as developmental delays. Diagnosis is mainly clinical and depends on the presence of at least 2 of the following for at least 2 months (ANECCA, 2004):

- Failure to attain or loss of developmental milestones or loss of intellectual ability
- Impaired brain growth or acquired microcephaly
- Acquired symmetrical motor deficit manifested by 2 or more of the following: paresis, pathologic reflexes, ataxia, or gait distrubances
- Normal CSF (or non-specific findings) and, if CT scan available, evidence of diffuse brain atrophy

Developmental delays: Mental retardation is the developmental failure of a growing child to achieve his or her potential Intellectual Quotient (IQ). Such children are slow in learning, repeating classes and presenting as chronologically older than their classmates, though they may look smaller than expected for their chronological age. Other marks of retarded development including stunted growth and delayed pubescence. Children with developmental delays may develop other HIV-related neuropsychiatric problems.

Both progressive multifocal leukoencephalopathy (PML) and HIV encephalopathy are indicative of advanced HIV disease.

Note: HIV encephalopathy can only be reversed by ART. If ART is available, it is critical for children to be assessed for neurological function early so that ART can be initiated before severe, irreversible brain damage develops.

Management

Non-Pharmacologic Symptom Management

Address movement disorders, attention deficit disorder, and psychiatric/behavioural disorders. If available, provide occupational, speech, and physiotherapy.

Address developmental delays. If available, institute special education classes for affected children after thorough neuropsychological assessment.

Published 2006

Pharmacologic Symptom Management

Treat pain according to WHO 3-Step Analgesic Pain Ladder (see Chapter 4: Pain Management).

HIV encephalopthy, irrespective of CD4 counts or percentage, is a specific criterion for initiation of ART. If ART is available, it is unacceptable to wait for the child to develop severe brain damage due to HIV before starting ART.

Psychological Problems

See Chapter 14: Communicating with Patients and Their Families and Chapter 29: Psychosocial and Spiritual Care for more on assessment and management of these problems.

Assessment

Psychosocial problems, including low self esteem, inadequate family support, poor social skills, stigmatisation, and unresolved grief, are very common among children living with HIV/AIDS. Problems can result from trauma to the child, depletion of household resources, having to drop out of school, becoming orphaned, and other events that may occur any time along the HIV/AIDS journey. They may be a consequence of either the child or a significant member(s) of the family becoming infected with HIV.

Psychosocial problems are a major cause of distress and compound the pains children living with HIV/AIDS may have. Unfortunately, these problems are often ignored by curative models of HIV care.

Management

Non-pharmacologicl symptom management

If a child is anxious or depressed, the value of another human presence should not be underestimated. Encourage the child to use both verbal and non-verbal avenues for expression.

Manage psychosocial issues using a multidisciplinary approach in partnership with caregivers and various resources from the community. Poverty, which propagates HIV transmission and is in turn a consequence of the disease, also needs to be considered in all attempts to mitigate the effects of HIV/AIDS on the child.

Pharmacologic Symptom Management

Anxiolytics and antidepressants have important roles in relieving anxiety and depression. If the child is on ART, it must be noted that drug interactions are common between these drugs and protease inhibitors and NNRTIs (See Chapter 11: Pharmacology and Appendix 2).

Published 2006

References

African Network for the Care of Children Affected by AIDS (ANECCA). 2004. Tindyebwa D, Kayita J, Musoke P, et al, eds. *Handbook on Paediatric AIDS in Africa*. Uganda: African Network for the Care of Children Affected by AIDS. Available at: http://www.fhi.org/en/HIVAIDS/pub/index.htm. Accessed 6/05.

American Academy of Paediatrics. 2003. Red Book 2003. *Report of the Committee on Infectious Diseases,* 26th ed. Pickering LK, ed. Elk Grove Village, IL, U.S.: AAP.

Callahan JM. 1999. Emergency evaluation and care. In Zeichner SL, Read JS, eds. *Handbook of Paediatric HIV Care*. Philadelphia: Lippincott Williams & Wilkins.

Musisi S, Kinyanda E. 2003. The psychological problems of HIV-seropositive adolescents as seen at Mildmay Centre, Kampala, Uganda. Proceedings of the 4th Annual WPA Western Africa, Regional Psychiatric Conference. Nairobi, Kenya.

WHO. 2004. Palliative care: symptom management and end-of-life care module, *Integrated Management of Adolescent and Adult Illness*. Geneva: WHO.

Published 2006

Published 2006