

Anaesthesia recommendations for **Leprosy**

Disease name: Leprosy

ICD 10: A30

Synonyms: –

Disease summary: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* and affects the skin and nerves, often seen in developing countries. Prevalence of leprosy is 5.7 per 10.000 population. There are two forms included, tuberculoid and lepromatous leprosy. Pathway of the infectious disease is mainly through nasal droplet infection, contact with infected soil or insect vectors. Lepra primarily keep in skin and peripheral nerves, especially effects that mucosa, upper respiratory tract, subcutaneous parts of the nerves and eye. Neuropathy causes insensitiveness and myopathy such as planter ulceration, foot drop and joint deformities. The autonomic nervous system, cardiovascular system, respiratory system, hepatobiliary system, renal system are also affected. These manifestations lead to important complication as baroreflex dysfunction, respiratory dysautonomia, leprous hepatitis, orchitis, glomerulonephritis, amyloidosis. With early diagnosis followed by an appropriate treatment with rifampicin, dapsone and in case of lepromatous leprosy additionally with clofazimine, patients can be cured without further disabilities.

Medicine is in progress



Perhaps new knowledge

Every patient is unique

Perhaps the diagnosis is wrong



Find more information on the disease, its centres of reference and patient organisations on Orphanet: www.orpha.net

Typical surgery

Orthopaedic surgery, Caesarean Section, Nephrectomy, Ophthalmic Surgery, Cataract, Emergency Surgical Procedure.

Type of anaesthesia

There is no definite recommendation for either general or regional anaesthesia.

Spinal and epidural anaesthesia management needs carefulness in patients with leprosy because of increased risk of hypotension and increased incidence of urinary retention. Neurologic deficits can be encountered before and after nerve blocks or regional anaesthesia as well. Regional anaesthesia is controversial in the case of bacteraemia and local infection. Aseptic meningitis has been reported as a complication after regional anaesthesia for elective caesarean section. Combined spinal epidural anaesthesia application for an emergency caesarean can be preferred in a patient with lepromatous leprosy.

Necessary additional pre-operative testing (beside standard care)

The following organ systems should be examined before surgery and anaesthesia:

- Cardiovascular system: disordered autonomic nervous function, impaired myocardial contractility and myocardial ischaemia. These can lead to cardiac arrest, hypo-reactive heart rate, dysrhythmias and sudden death during intubation, extubation and after administration of various drugs. So, ECG (arrhythmias and increased QT-intervals) and echocardiography are recommended.
- Neurological system: Assessment of neurological status before regional anaesthesia.
- Respiratory system: increased risk of infection, aspiration, difficult intubation and delayed postoperative recovery. Pulmonary function tests, careful airway examination and aspiration prophylaxis are recommended.
- Renal system: amyloidosis, glomerulonephritis or interstitial nephritis may occur. Renal function should be assessed.
- Hepatobiliary system: leprosy or drug induced hepatitis can lead to altered metabolism of drugs. Transaminases should be determined.
- Haematological system; Anaemia, methemoglobinemia, agranulocytosis and thrombocytopenia can be seen. Oxygen carrying capacity and clotting disorders can occur, risk of postoperative infection is increased. haemogram and coagulogram should be checked.
- Bones; Osteomyelitis, bone resorption may develop. Radiological assessment can be useful.

Particular preparation for airway management

There are a risk of aspiration and difficult intubation due to respiratory dysautonomia, nasal obstruction, vocal cord disorder, osteomyelitis and bone resorption especially in the cranio-facial area. Detailed airway assessment, indirect laryngoscopy and prophylaxis for aspiration are useful strategies.

Management of difficult airway is mandatory.

Particular preparation for transfusion or administration of blood products

There is some significant evidence for thrombocytopenia, agranulocytosis, anaemia and methemoglobinemia.

It has been reported that changes in the intraneural blood vessels can be found with impairment of the basement membrane of capillaries and oedema of vessel walls, which will result in occlusion of their lumina, potentially causing ischaemia to nerves.

Particular preparation for anticoagulation

There is some evidence for impaired clotting. Alterations in the activated partial thromboplastin time (APTT) have been observed [3,5].

Particular precautions for positioning, transportation and mobilisation

Patients with leprosy suffer from bone resorption and osteomyelitis. Pathological fractures during positioning is a risk.

Interactions of chronic disease and anaesthesia medications

For the therapy of lepromatous leprosy, a multi-drug therapy is recommended by WHO including dapson, rifampicin and clofazimine for more than 30 years.

Dapsone, a folate antagonist, has important adverse effects including haemolytic anaemia, methemoglobinemia, agranulocytosis, hepatitis, peripheral neuropathy, psychosis and lepra-reaction.

Rifampicine may be prone to following adverse effects; hepatitis and intermittent toxic syndromes such as flu syndrome, shock syndrome, and rarely, thrombocytopenic purpura and acute renal failure.

Anaesthetic procedure

Leprosy is a highly infectious disease of low pathogenicity. The nasal mucosa of lepromatous cases harbour millions of *M. leprae* which are discharged during sneezing. The bacilli can

also exit through ulcerated or broken skin of infected patients. These facts may leave implications for the anaesthesiologists when such patients come for surgery or for treatment in intensive care units. Fortunately, it has been found that local application of rifampicin drops or spray destroys most of the bacilli within a short period.

A careful physical exam and organ function tests should be performed, especially in patients with long-lasting disease, but in some cases, organ manifestations occur already in beginning forms. It should be focused especially on the assessment of difficult airway situations.

For anaesthesia, general and regional anaesthesia can be performed. During general anaesthesia, an impaired metabolism of the used drugs should be recognized with prolonged effect of the hypnotic and analgesic drugs. Before regional anaesthesia, the neurological status and grade of sexual impotence should be recorded.

Spinal and epidural anaesthesia should be performed cautiously, because these may lead to profound hypotension and urinary retention in patients with involvement of the autonomic nervous system.

Patients with leprosy have cardiac dysautonomia with impaired blood pressure responses, silent cardiac ischaemia and prolongation of QT-interval. These can lead to bradycardia, hypotension and cardiac arrest or various other arrhythmias. Especially anaesthesia induction, extubation or the use of anticholinergic drugs indicate special attention.

Avoid drugs which lead to prolongation of QT-interval, like paracetamol or setrone.

Particular or additional monitoring

No special monitoring is necessary. Standard monitoring as ECG, SPO₂, etCO₂, temperature, urine output were done.

Invasive blood pressure measurement is useful in case of high risk surgery.

Possible complications

Patients with leprosy are at risk for respiratory and cardiac insufficiency.

Drug metabolism may be affected due to renal function disorder and liver dysfunction. Hypotension, arrhythmia and bradycardia can be seen.

Post-operative care

Postoperative monitoring is depending on surgical procedure and preoperative condition of the patient. Intensive care is not mandatory, but should be available in certain conditions.

Respiratory dysautonomia lead to decreased breath holding time, depressed cough reflex and risk of aspiration that may increase the incidence of postoperative complication or need for postoperative ventilation.

Avoid prolonged ventilation because the patients may have respiratory dysautonomia and increased risk of pulmonary infection.

Disease-related acute problems and effect on anaesthesia and recovery

Disease triggered emergency-like situations are not common.

Ambulatory anaesthesia

Not reported. Avoid ambulatory anaesthesia in patients with impaired autonomic nervous system, cardiovascular system, respiratory system, hepatobiliary system or renal system.

Obstetrical anaesthesia

The first clinical presentation of leprosy or aggravation of the existing disease can be seen in pregnancy.

There is one case report where emergency cesarean section has been performed as spinal anaesthesia.

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