orphanaesthesia

Anaesthesia recommendations for patients suffering from

Pallister-Hall Syndrome

Disease name:	Pallister-Hall Syndrome
ICD 10:	D33.0
Synonyms:	Hypothalamic hamartoblastoma syndrome

Disease summary: Pallister-Hall syndrome (PHS) is a rare autosomal dominant congenital disorder that is characterized by polydactyly, hypothalamic hamartoma, hypopituitarism, bifid epiglottis, and imperforate anus. PHS is caused by mutations of the GLI3 gene (7p13). Typical facial features are normal, but some patients have short nose, cleft palate, gingival cysts, cleft larynx or bifid epiglottis and midface retrusion. Most patients with PHS require surgery due to primarily to polydactyly or syndactyly, but a few may need surgery for imperforate anus, or genitourinary malformations. Patients with hypopituitarism need steroid and other hormonal replacement therapy. Renal or ear anomalies, deafness, epilepsy, and intellectual disability mental retardation are uncommon, but are also associated with PHS.

Medicine 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

Typical surgeries in the PHS patients include treatment for polydactyly, imperforate anus, and genitourinary anomalies. Surgery for hypothalamic hamartoma is rarely indicated, but may be necessary in atypical patients.

Type of anaesthesia

General anaesthesia with tracheal intubation is preferred due to increased risk of pulmonary aspiration in patients with laryngeal cleft. Intubation may be challenging due to pharyngeal anomalies. Flexible fibre optic bronchoscopic intubation is preferred, as direct laryngoscopy may cause bleeding in patients with a bifid epiglottis. Awake bronchoscopy may be necessary if it appears the patient may not be easily ventilated by mask.

Neuraxial or regional anaesthesia might be difficult because of hypothalamic hamartoma and intellectual disability, but in selected cases, it may avoid airway manipulation.

Necessary additional diagnostic procedures (preoperative)

Bifid epiglottis or laryngeal clefts predisposes the patients to pulmonary aspiration of gastric contents. In patients with laryngeal clefts, chest X-ray and oxygen saturation must be evaluated preoperatively, because the patients may have pre-existing lung damage due to recurrent aspiration pneumonia.

Congenital heart disease is frequently associated with PHS. Electrocardiogram and echocardiogram are recommended to detect cardiac malformations.

Other reported organ malformations such as hypopituitarism and renal anomalies may require further evaluation to exclude any potential issues arising with requirement of stress doses of steroids, fluid management, or renal clearance. Adrenal insufficiency should be ruled out to prevent an adrenal crisis. Neurological examination should exclude the presence of intracranial hypertension. A renal ultrasound may evaluate the presence of renal abnormalities.

A large number of other anomalies have been described in patients with Pallister-Hall syndrome, but each of them are uncommon. It is important that the patient be evaluated by a clinical geneticist for other anomalies prior to elective surgery so that the anaesthetist can properly manage the patient for those anomalies.

Particular preparation for airway management

Patients with PHS may have dysmorphic facial appearance (hard palate malformation, cleft larynx, gingival cysts, and bifid epiglottis). Tracheal intubation may be difficult and laryngeal clefts increase the risk of pulmonary aspiration; bleeding during direct laryngoscopy may occur. Pretreatment with a histamine (H2) antagonist or proton pump inhibitor and a non-particulate antacid is recommended. Appropriate difficult airway equipment should be prepared in the operating room; a surgical airway may be needed emergently and appropriate personnel should be immediately available.

Particular preparation for transfusion or administration of blood products

Not reported. The general rules for perioperative blood management may be applied.

Particular preparation for anticoagulation

Not reported.

Particular precautions for positioning, transport or mobilisation

Not reported.

Probable interaction between anaesthetic agents and patient's long term medication

Some patients receive steroid and other hormonal replacement therapy because of hypopituitarism. Stress doses of steroids should be administered perioperatively.

Some patients require anticonvulsant drugs to minimize seizure risk. Long term use of certain anticonvulsant agents may induce rapid metabolism of neuromuscular blockers and opioids by up-regulating hepatic P450 enzymes.

Anaesthesiologic procedure

Special caution should be paid to avoid pulmonary aspiration during the induction of general anaesthesia in patients with laryngeal clefts.

Consider fibre optic intubation because of increased bleeding risk during conventional laryngoscopy and difficult mask ventilation.

Muscle relaxants and opiates may be metabolised more rapidly due to use of anticonvulsant drugs.

Particular or additional monitoring

Neuromuscular function monitoring is recommended.

Invasive haemodynamic monitors may be considered in patients with congenital heart disease depending on their severities. Intracranial pressure may be monitored in patients with intracranial hypertension.

Possible complications

Aspiration pneumonia may occur after surgery, especially in patients with laryngeal clefts.

Postoperative seizures may occur. Continuation of anticonvulsant drugs is recommended perioperatively.

Adrenal insufficiency may occur. Secondary adrenal insufficiency should be considered when unexplained perioperative hypotension is present.

Postoperative care

Respiratory monitors (oximetry, capnography) should be used postoperatively, due to risks of respiratory complications.

Blood pressure may be very labile because of adrenal insufficiency and should be monitored closely.

Information about emergency-like situations / Differential diagnostics

caused by the illness to give a tool to distinguish between a side effect of the anaesthetic procedure and a manifestation of the diseases, e.g.:

Stress doses of corticosteroids should be administered when unexplained perioperative hypotension is seen. Secondary adrenal insufficiency is diagnosed if corticosteroids are effective.

Ambulatory anaesthesia

Not reported. Ambulatory anaesthesia is not recommended because patients with moderate to severe manifestations of PHS may require extensive postoperative care, as mentioned above.

Patients with mild PHS might be appropriate for ambulatory anaesthesia.

Obstetrical anaesthesia

Women with a seizure disorder are at greater risk for mortality during pregnancy, and antiepileptic therapy reduces that risk; however, antiepileptics also increase the risk of fetal death.

Literature and internet links

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2. Oe Y, Godai K, Masuda M, Kanmura Y. Difficult airway associated with bifid glottis and coexistent subglottic stenosis in a patient with Pallister-Hall Syndrome: A case report. JA Clin Rep.2018;4:20
3. Biesecker LG, Graham JM, Jr. Pallister-Hall syndrome. J Med Genet 1996;33:585-589
4. Kraus M, Diu M. Bifid epiglottis in a patient with Pallister-Hall syndrome. Can J Anaesth 2016; 63:1197-1198
5. Ondrey F, Griffith A, Van Waes C, Rudy S, Peters K, McCullagh L, Biesecker LG. Asymptomatic laryngeal malformations are common in patients with Pallister-Hall syndrome. Am J Med Genet 2000;94:64-67
6. Riutort KT, Feinglass NG, Brull SJ. Anesthetic implications of Pallister-Hall Syndrome in patients with a bifid epiglottis. Rom J Anaesth Intensive Care 2009;16:71-74
7. Stevens CA, Ledbetter JC. Significance of bifid epiglottis. Am J Med Genet A 2005;134:447-449
8. Tsurumi H, Ito M, Ishikura K, Hataya H, Ikeda M, Honda M, Nishimura G. Bifid epiglottis: syndromic constituent rather than isolated anomaly. Pediatr Int 2010;52:723-728.

Internet links:

Genetic and Rare Diseases Information Center :
https://rarediseases.info.nih.gov/diseases/7305/pallister-hall-syndrome

Genetics Home Reference:
https://ghr.nlm.nih.gov/condition/pallister-hall-syndrome

National Organization for Rare Disorders:
https://rarediseases.org/rare-diseases/pallister-hall-syndrome/

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