



High-Risk Harmony: Perioperative Anaesthetic Strategies in Trisomy 21 and AML During Corticotomy for Osteomyelitis in aResource-Constrained Setting

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BACKGROUND

- Children with Trisomy 21 have distinctive airways and cardiopulmonary vulnerabilities that complicate anaesthesia.
- Coexistent acute myeloid leukaemia introduces cytopenias and infection susceptibility, amplifying peri-operative risk during sepsis when source control is critical.
- Evidence guiding anaesthetic strategy in children with concurrent T21, AML, and sepsis remain sparse, particularly in resource-limited settings.

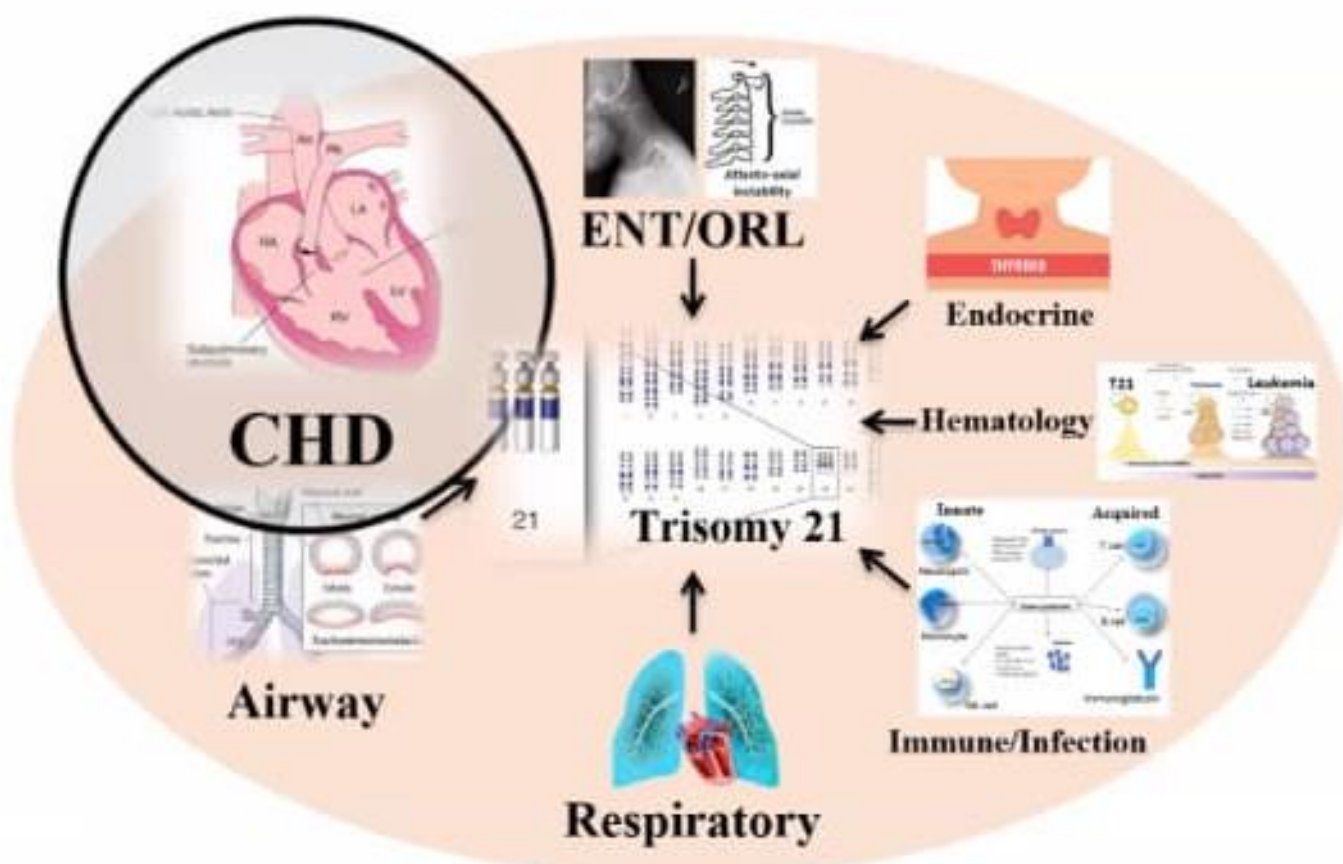
DESCRIPTION OF THE CASE

- This report describes the perioperative anaesthetic management of a 20-month-old, 9 kg girl with Trisomy 21 and AML.
- She developed left tibial osteomyelitis two months after bone marrow aspiration.
- Urgent corticotomy was required despite limited optimisation.
- She was septic with anaemia, thrombocytopenia, decompensated cardiac failure, anasarca, hepatosplenomegaly, URTI, and cardiomegaly.
- Echocardiography showed a small pericardial effusion with preserved ejection fraction.
- Optimisation with antibiotics, diuretics, chemotherapy, and transfusions was constrained by difficulty securing O-negative blood.
- Values improved to Hb 7.9 g/dL, platelets 55 × 10⁹/L, PT 17.2 s/INR 1.5.
- Ongoing sepsis mandated surgery (ASA 3E).
- Spinal anaesthesia was performed after sevoflurane-facilitated IV access. The 30-minute corticotomy proceeded uneventfully.
- She was transferred to PICU, illustrating spinal anaesthesia’s value in high-risk paediatric sepsis with cardiac compromise.
- Parental consent was obtained.

DISCUSSION

- Given hazards of airway difficulty, myocardial compromise, and fluid overload, general anaesthesia was deemed high risk.
- Despite borderline thrombocytopenia, spinal anaesthesia was selected as the safer option; with platelet counts ≥50 × 10⁹/L cited as a lower limit for neuraxial techniques, bleeding risk was judged lower than risks posed by general anaesthesia.
- Uneventful intraoperative course and stable recovery demonstrate that, in resource-limited settings, pragmatic, flexible strategies can achieve safe outcomes.
- Meticulous risk–benefit appraisal and tailoring of the anaesthetic plan to both physiology and context are essential when conventional optimisation thresholds cannot be met.

Anesthesia considerations for neonates with Trisomy 21



LEARNING POINTS

1. Manage haematological risks of bleeding, infection, and delays.
2. In low-resource settings, adapt anaesthesia; spinal may be viable with thrombocytopenia.
3. Sepsis often requires urgent surgery despite incomplete optimisation.

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Full blood count`	On admis sion	2nd	3rd	4th	5th	Pre-op	Reference ranges	Unit
Hemoglobin	9.3	9.3	6.3	8.2	5.3	7.90	10-13	g/dL
Mean corpuscular volume	82	N/A	82	78.9	82.2	81	70-86	fL
Mean corpuscular hemoglobin	26.8	N/A	26.8	25.4	26.9	26.50	23-30	pg
Platelet	11	11	24	49	33	55	150-450	x10 ⁹ /L
White cell count	22.18	22.18	37.7	46.03	40.05	51.14	61.75	x10 ⁹ /L
Neutrophils	1.24	1.24	4.2	8.42	8.94	12.18	1.58	%
Lymphocyte	13.4	13.14	36	14.13	8.32	8.47	13.57	%
Monocyte	7.78	7.78	59.5	22.51	22.7	30	22.43	%

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