High-Altitude Illness Can Happen Lower Than You Think: A Case of HAPE in a 19-Year-Old with Down Syndrome at 2300 Meters

Brandon Middlemist BA[1], Nicholas Breitnauer MD[1,2]

[1]University of Colorado School of Medicine,
[2]Department of General Internal Medicine, Denver Health and Hospital Authority

Background

High-altitude pulmonary edema (HAPE) occurs after rapidly ascending to high altitudes (>2,500m)[2] .

- Typically presents within 1-3 days of ascent

Clinical signs and symptoms:

- Cough, rapid onset dyspnea, pink frothy sputum, cyanosis
- Can rapidly progress to respiratory distress and respiratory failure

Risk Factors for HAPE[1,3,4]:

- Severe physical exertion
- Recent or active respiratory viral illness
- Pulmonary hypertension
- Pulmonary overperfusion in the setting of current or historic cardiac defect

Case Presentation

19 y/o female with history of AVSD (repaired) and Down Syndrome travelling from Missouri (244m) to Moab, Utah was hiking at the Great Sand Dunes National Park (2,345m):

- Developed severe dyspnea, headache, vomiting.
- Had symptoms of viral upper respiratory infection one week prior, has history of endocarditis w/ URIs

Her mother, a nurse, measured and found her O2 saturation to be 60% and brought her to an emergency room at the critical access hospital in Del Norte, Colorado (2,396m).

Evaluation and Workup

- Initial SpO_2 upon presentation to the emergency room was 48%, which rapidly corrected with high-flow oxygen (15L via NRB at 100% FiO_2)
- On exam, appeared in respiratory distress and was tachypneic (RR 32), had bibasilar crackles on auscultation
- Labs:
  - Troponin (ng/mL): 0.45 (initial) → 0.5 (hour 3) → 0.06 (hour 24)
  - WBC: 7.1
  - NT-BNP (pg/mL): 5602
- Imaging Studies:
  - Chest X-ray demonstrates LUL opacification best seen in lateral view (Figures 1 & 2)
  - Computerized tomography (CT) angiography demonstrates diffuse ground glass opacities without evidence of pulmonary emboli (Figure 3)

Radiographic Findings

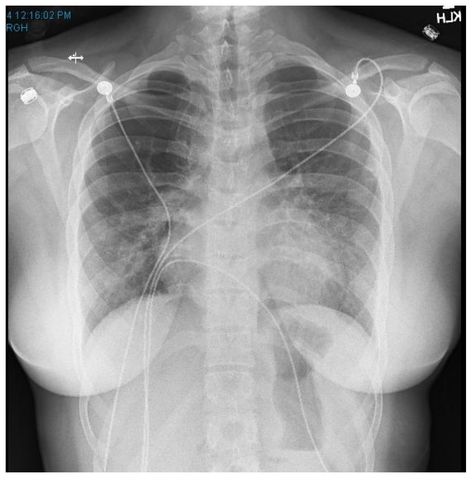

Figure 1: AP Chest X-ray

Figure 2: Lateral Chest X-ray

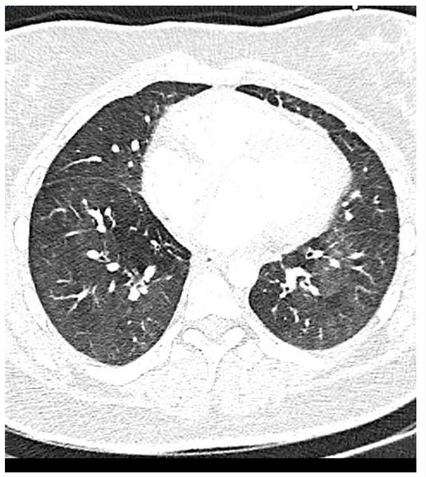

Figure 3: CT-PE

Hospital Course

Symptoms rapidly improved with oxygen:

- Received dexamethasone and nifedipine in the ER
- Continued desaturations to the mid 70s with activity on room air

Discharge Plan:

- Coordinated with oxygen company in Missouri to discharge with home oxygen
- Discharged on 2LPM until at lower altitude
- Echocardiography upon returning home

Conclusion

We present a case of HAPE in a teenage female with multiple risk factors:

- Recent respiratory illness
- Severe exertion
- History of corrected congenital heart defect

We encourage families and clinicians to discuss risks prior to travel to moderate/ high altitudes.

Disclosures

The authors have nothing to disclose.

References

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