

Title: Hyperoxic Acute Lung Injury

I. Introduction

- A. Brief overview of the importance of oxygen therapy
- B. Introduction to Hyperoxic Acute Lung Injury (HALI)
- C. Goals and objectives of the lecture
 1. Identify hazards associated with oxygen therapy.
 2. Discuss the importance of appropriate oxygen titration.
 3. Compare the hazards associated with hypoxemia vs hyperoxemia.

II. Oxygen Therapy

- A. Indications for oxygen therapy
- B. Hazards of oxygen therapy
- C. Importance of maintaining appropriate oxygen levels

III. Hyperoxic Acute Lung Injury (HALI)

- A. Definition and explanation of HALI
- B. Pathophysiology
 1. Reactive oxygen species (ROS)
 2. Inflammatory responses
- C. Risk factors for HALI
 1. High FiO₂ levels
 2. Prolonged exposure to oxygen
 3. Pre-existing lung conditions
- D. Clinical presentation
 1. Symptoms and signs
 2. Radiological findings

Cooper JS, Phuyal P, Shah N. Oxygen Toxicity. [Updated 2023 Aug 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan. <https://www.ncbi.nlm.nih.gov/books/NBK430743/>

Singer, M., Young, P.J., Laffey, J.G. *et al.* Dangers of hyperoxia. *Crit Care* 25, 440 (2021). <https://doi.org/10.1186/s13054-021-03815-y>

IV. Research and Advances

- A. Current research on HALI
- B. Potential future treatments and prevention methods
- C. The importance of ongoing studies in this area

Richard H Kallet, Richard D Branson. Should Oxygen Therapy Be Tightly Regulated to Minimize Hyperoxia in Critically Ill Patients? *Respiratory Care* June 2016, 61 (6) 801-817; DOI: 10.4187/respcare.04933

Ni YN, Wang YM, Liang BM, Liang ZA. The effect of hyperoxia on mortality in critically ill patients: a systematic review and meta analysis. BMC Pulm Med. 2019 Feb 26;19(1):53. doi: 10.1186/s12890-019-0810-1. PMID: 30808337; PMCID: PMC6390560.

V. Prevention and Management

A. Strategies for preventing HALI

1. Monitoring oxygen levels
2. Adjusting FiO₂
3. Using oxygen conserving devices

B. Treatment and management of HALI

1. Supportive care
2. Ventilatory strategies
3. Role of antioxidants

VI. Conclusion

A. Recap of key points

B. Emphasize the significance of early detection and management

C. Open the floor for questions and discussion

VII. Q&A and Discussion

A. Encourage questions from the audience

B. Engage in a discussion about HALI and its implications

VIII. Closing Remarks