



Treatment of a 16-year-old with *Clostridium septicum* Myonecrosis

Matthew E Naumann, MD¹ & Sheryl L Henderson, MD, PhD¹

¹University of Wisconsin – Madison

School of Medicine and Public Health, Department of Pediatrics

BACKGROUND

- *Clostridium septicum* myonecrosis is a process that has rarely been reported in children
- Mortality rates are thought to be at least 50% in previously healthy patients
- Ideal therapy consists of antibiotics and surgical debridement
- The effectiveness of hyperbaric oxygen has been suggested as a adjunctive treatment for infections with *C septicum*
- Hyperoxia is known to have its own side effects, thought to be due to reactive oxygen species

CASE

Patient: 16-year-old girl with a history of ovarian cancer s/p cycle 1 of chemotherapy

Chief Complaint: Several days of abdominal pain

Case Details:

- On the day of admission, the patient rapidly progressed to septic shock secondary to neutropenic colitis
- She underwent total colectomy with delayed abdominal closure, and blood cultures grew *C septicum*
- She remained on broad-spectrum antibiotics, consisting of a combination of daptomycin, meropenem, micafungin, and metronidazole
- On hospital day #8, she began reporting left hip pain and worsening erythema over the area
- Her symptoms were ultimately found to be secondary to extensive muscle necrosis (with gram-positive rods visualized on pathology)
- Surgical debridement was not an option given the extent of the necrosis

Clostridium septicum myonecrosis was successfully treated using a combination of broad spectrum antibiotics and hyperoxia

INTERVENTION & OUTCOME

Treatment:

- Despite being on broad-spectrum antibiotics that the offending strain of *C septicum* was susceptible to, her symptoms continued to worsen
- Hyperbaric oxygen therapy was considered as a last resort, but the patient was too unstable for transport
- Given that she was intubated, the decision was made to utilize her endotracheal tube using the following regimen:
 - 24 hours of 100% FiO₂
 - A second 24-hour period of alternating 6-hour segments of 100% FiO₂ and 21% FiO₂

Outcome:

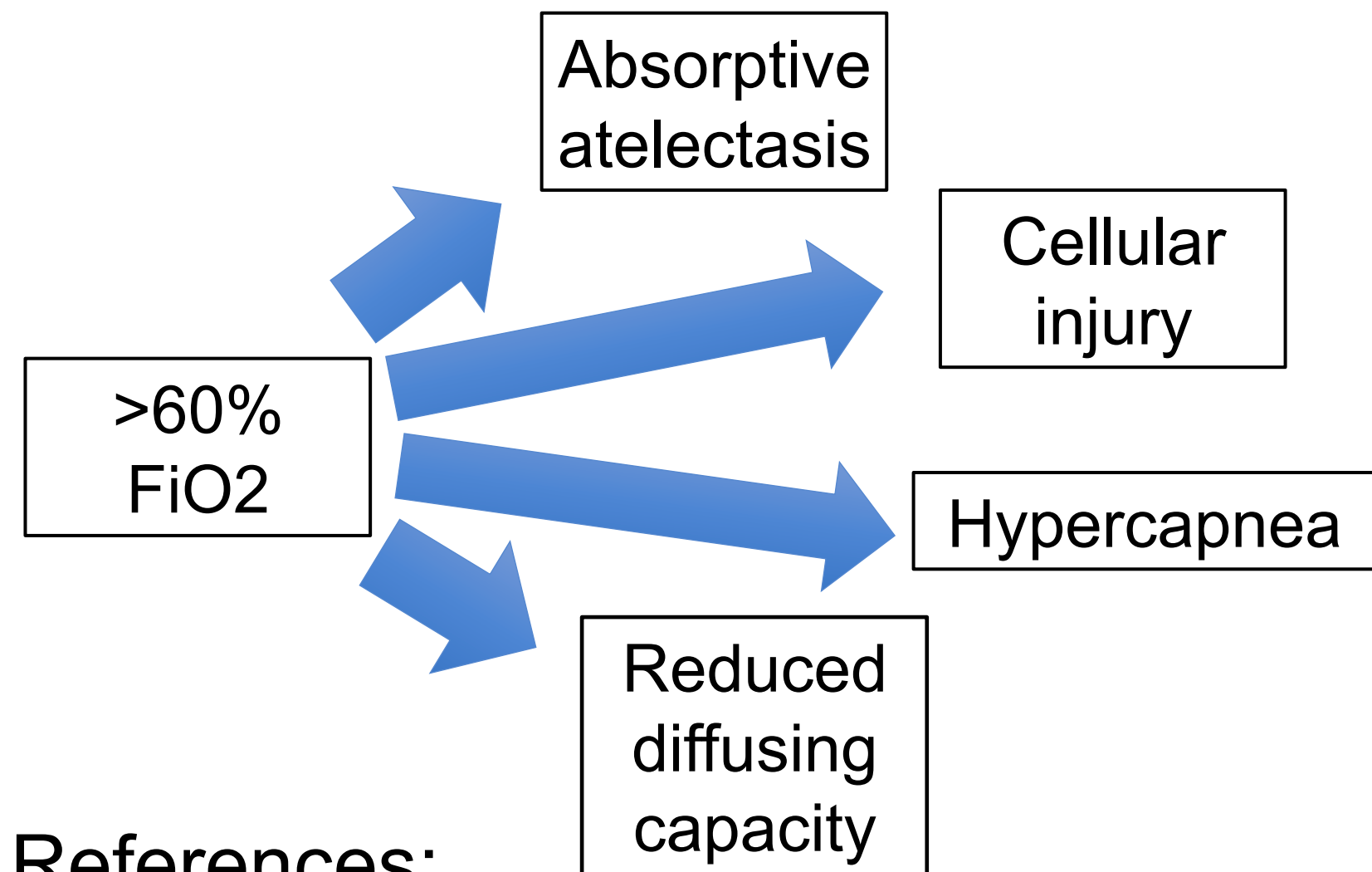
- Two days following the hyperoxia treatment, the patient reported resolution of her hip pain
- Her clinical course continued to improve on broad-spectrum antibiotics until discharge
- Following discharge, her clinical course was complicated by recurrent intra-abdominal fluid collections (culture-negative) requiring drains and long-term treatment with moxifloxacin
- She continued to have an intermittent BIPAP requirement secondary to restrictive lung disease

24 Hours	6 Hours	6 Hours	6 Hours	6 Hours
100% FiO ₂	21% FiO ₂	100% FiO ₂	21% FiO ₂	100% FiO ₂

CONCLUSIONS

- This case describes the rare complication of *C septicum* myonecrosis in a pediatric patient
- Given this is a single case, it is unclear how much the hyperoxia treatment contributed to the patient's recovery
- When hyperbaric oxygen therapy is being considered, the use of hyperoxia via an endotracheal tube may be a viable option
- Her ongoing need for antibiotic therapy may be secondary to *C septicum*'s tendency to create spores

ADDITIONAL KEY INFORMATION



References:

- Hart, GB; Lamb, RC; Strauss, MB. Gas Gangrene: I. A Collective Review. *J Trauma*, 1983, **23**: 991-1000.
- Wiersema, BM; Scheid, DK; Psaradellis, T. A Rare Trifocal Presentation of *Clostridium septicum* Myonecrosis. *Orthopedics.*, 2008, **31**: 274.
- Smith-Slatas, CL; Bourque, M; Salazar, JC. *Clostridium septicum* Infections in Children: A Case Report and Review of the Literature. *Pediatrics.*, 2006, **117**: e796-805.