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

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

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<th>24 Hours</th>
<th>6 Hours</th>
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<td>100% FiO2</td>
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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
- Absorptive atelectasis
- Cellular injury
- Reduced diffusing capacity

References:
- Wiersema, BM; Scheid, DK; Psaradellis, T. A Rare Trifocal Presentation of Clostridium septicum Myonecrosis. Orthopedics., 2008, 31: 274.