Not Another Rash: Anesthetic Management in a 15 month old with Rocky Mountain Spotted Fever

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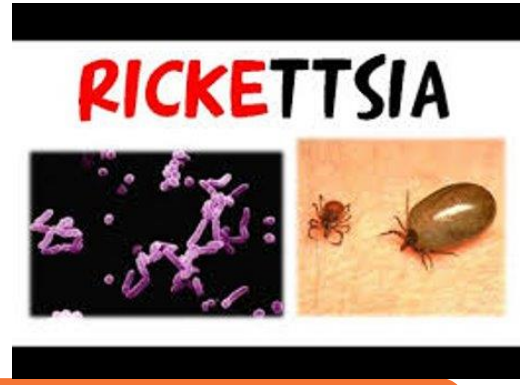
Disclosure

I have nothing to Disclose

Outline

- Introduction
- Case presentation
- Discussion
- Conclusion

Introduction



Rocky Mountain spotted fever (RMSF) is a life-threatening disease caused by *Rickettsia rickettsii*.

The pathogen is typically transmitted by the bite of an infected tick, with the most common natural reservoirs being hard ticks (family *Ixodidae*).

Rickettsial infection causes direct vascular injury.

Introduction Continued

Patients can display a range of cutaneous, cardiac, pulmonary, gastrointestinal, renal, neurological, ocular, and skeletal muscle manifestations upon presentation.

The classical clinical triad of fever, headache, and centrifugal rash is only seen in 3% of all patients with RMSF.

Case Presentation

15 month old male who presented to an outside hospital

Patient had petechial/purpuric rash, fatigue, and altered mental status who was subsequently transferred to BUMC after developing febrile seizures.

The patient was intubated with a size 5 cuffed ETT at the outside hospital for airway protection prior to transfer.

The patient was in septic shock and now developed DIC.

He also developed myocarditis and skin necrosis in his fingertips early in his hospital course.

He was started on empiric antibiotic therapy

Later, he was diagnosed with Rocky Mountain Spotted Fever (RMSF).

On hospital day (HD) #6, the patient was extubated

later re-intubated the following morning

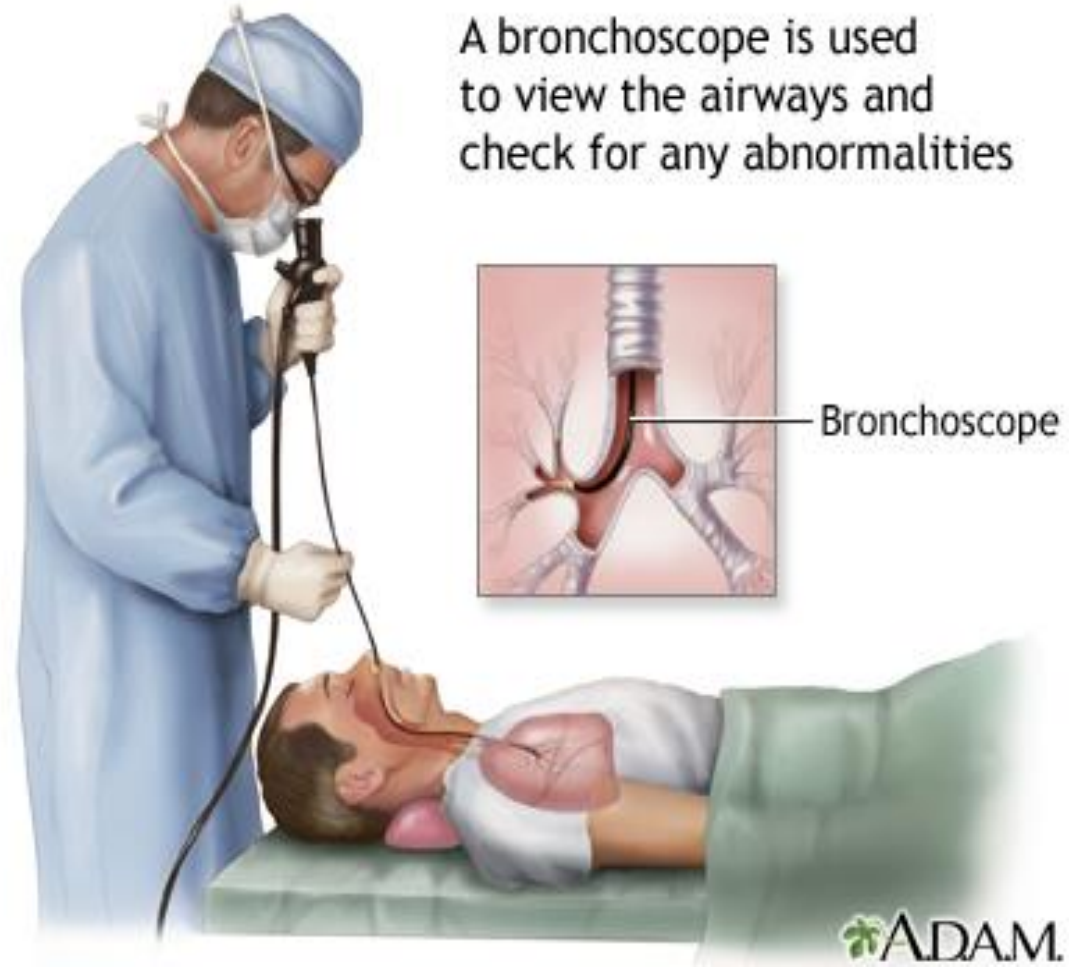
increased work of breathing that led to respiratory distress.

He was intubated with a size 4.5 cuffed ETT in one attempt by the intensivist without difficulty.

The patient was extubated again on HD # 17 after the patient had passed SBTs and had a positive leak test.

He began to have episodes of mild stridor when he cried, days after he was extubated.

- ENT was consulted and on HD #23 they performed a direct laryngoscopy and bronchoscopy.
- The exam revealed denuded mucosa at the glottis, posterior tracheomalacia at the subglottis and showed no lesions and **no obstruction/stenosis** in the trachea, down to the carina.
- There were no difficulties in managing his airway during induction and emergence.



MedlinePlus

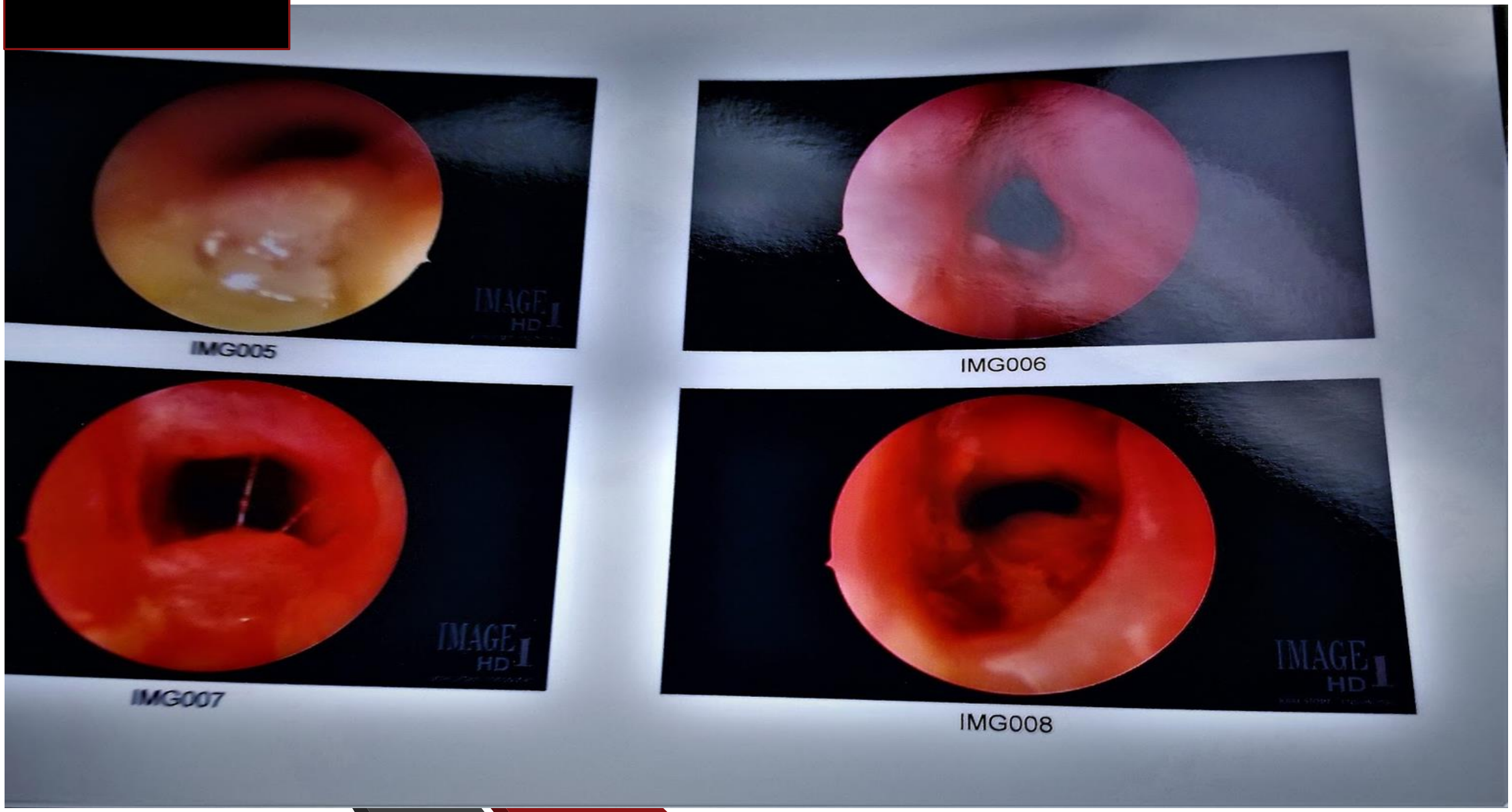
The patient was eventually transferred to the pediatrics floor, but would still occasionally have episodes of stridor that would resolve on its own.

On HD # 35, the patient had a severe episode of stridor that did not resolve and went into respiratory distress.

He was transferred to the PICU, and he improved after being given racemic epinephrine and Decadron.

On HD #37
he underwent another direct laryngoscopy and bronchoscopy with ENT.

On the exam the patient now had posterior vocal cord granulomas, **subglottic stenosis,** and mild posterior tracheomalacia in the proximal trachea.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On HD # 39, the patient went into respiratory distress after having a severe episode of stridor and developed AMS.

The pediatric anesthesiologist and PICU intensivist decided to intubate the patient in the operating room, with ENT on standby to perform a tracheostomy.

After induction the patient was able to be mask ventilated, and ENT performed at direct laryngoscopy where they saw no new changes from the last exam.

The patient was intubated with a uncuffed size 3.0 ETT with a positive leak.

After the procedure, pediatric pulmonology was consulted

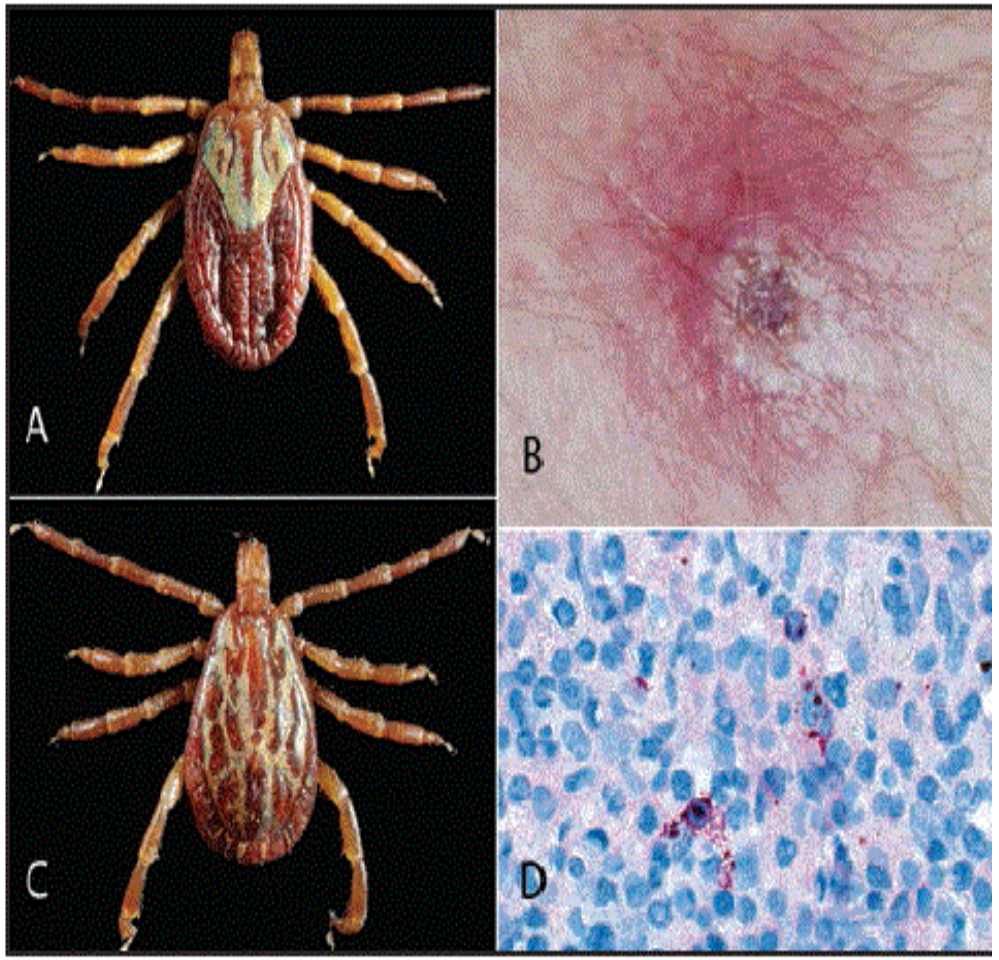
Pulmonology recommended that a tracheostomy should be performed.

On HD # 45 a tracheostomy was performed by ENT.

www.mskcc.org/cancer-care/patient-education/caring-your-tracheostomy

Discussion

- Pulmonary involvement in RMSF is common in patients with this disease.
- In a retrospective case study of 35 patients with RMSF, noncardiogenic pulmonary edema was commonly seen in patients with severe RMSF.
- They attributed the edema to *Rickettsiae* injuring the pulmonary capillary endothelium, altering the permeability.



www.cdc.gov/mmwr/volumes/65/wr/mm6528a3.htm

Secondary bacterial pneumonia was also seen in patients in with severe RMSF.

One adult patient in the case study had developed glottic edema and laryngeal hemorrhage, causing upper airway obstruction requiring intubation.

- Other factors that could have contributed to patient's development of **subglottic stenosis and tracheomalacia**
  - Improper endotracheal tube size
  - repeated intubation
  - prolonged intubation

- With prolonged intubation, when the pressure from the walls of the endotracheal tube becomes greater than the mucosal capillary pressure, ischemia occurs,
  - first with irritation, then congestion, edema, and eventually ulceration.
- Laryngeal damage begins during the first few hours, and continues with each further day of intubation.
- Typically, there is greater pressure on the surrounding posterior laryngeal structures, especially with a tube of excessive diameter.
- In infants and small children, the circumference of the subglottic space is especially vulnerable to stenosis due to its already relatively small caliber.

Conclusion

In this patient's case, it is possible that *Rickettsiae* may have caused direct vascular injury to mucosa in the subglottis, proximal trachea, and true vocal cords

This may have predisposed this patient to the development of his laryngeal injuries

These injuries were likely exacerbated by his prolonged intubation and improper endotracheal tube size.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Questions??

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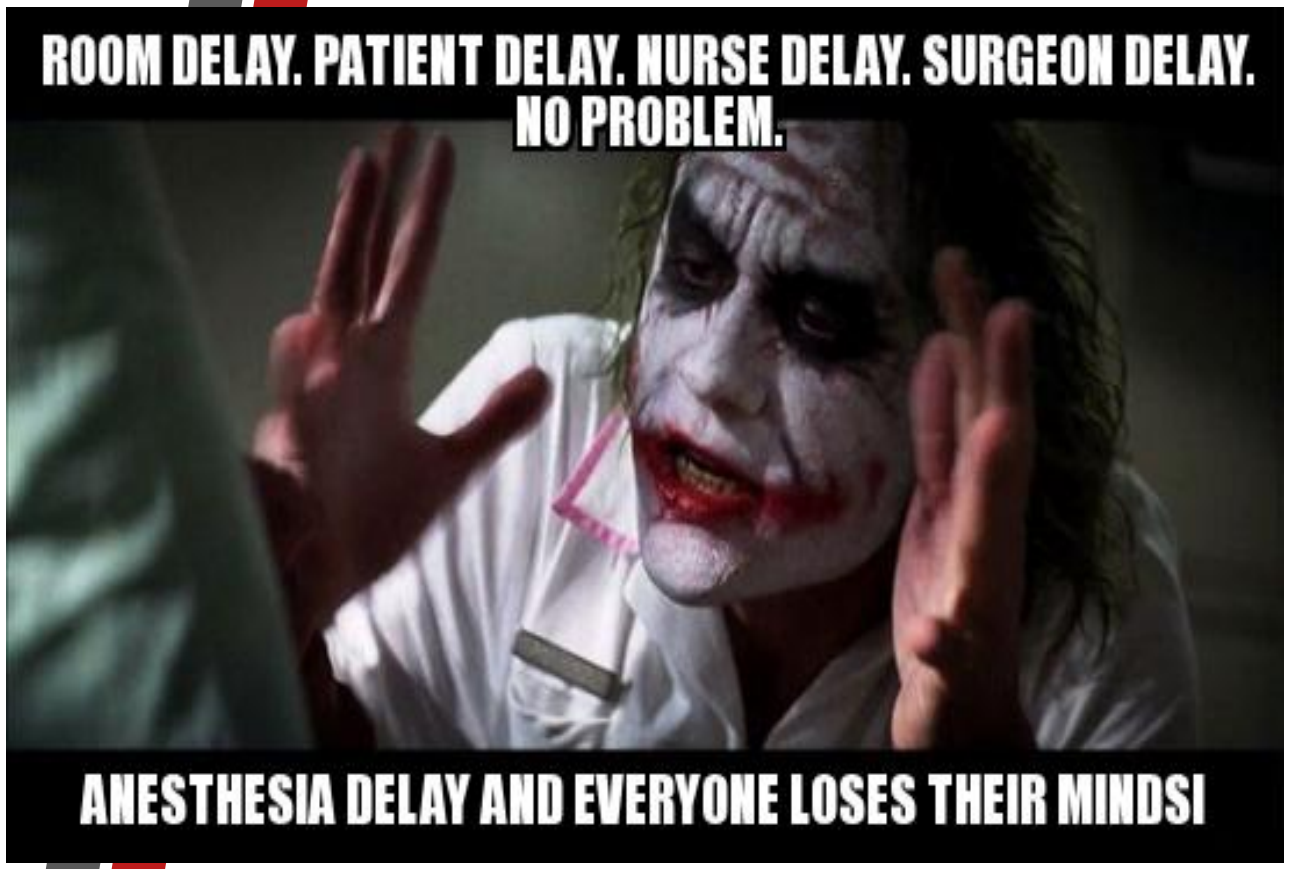
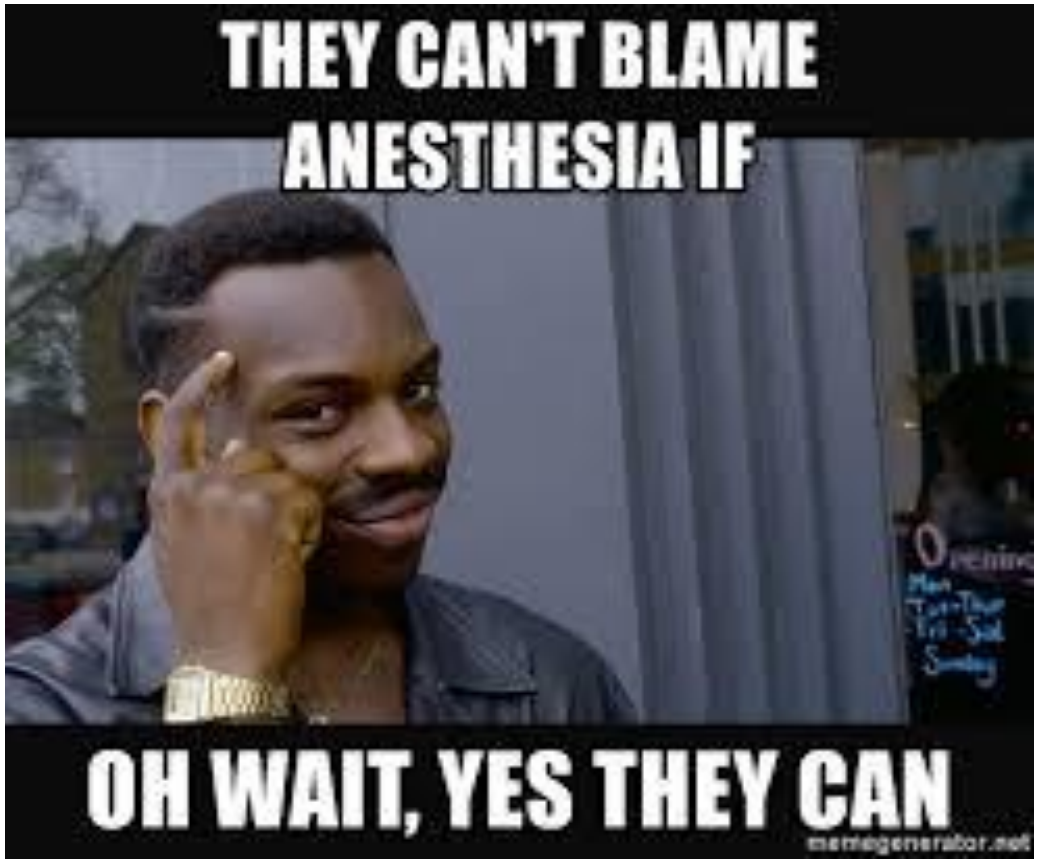
- Google images


ROOM DELAY. PATIENT DELAY. NURSE DELAY. SURGEON DELAY.
NO PROBLEM.
ANESTHESIA DELAY AND EVERYONE LOSES THEIR MINDSI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Thank You