

## Introduction

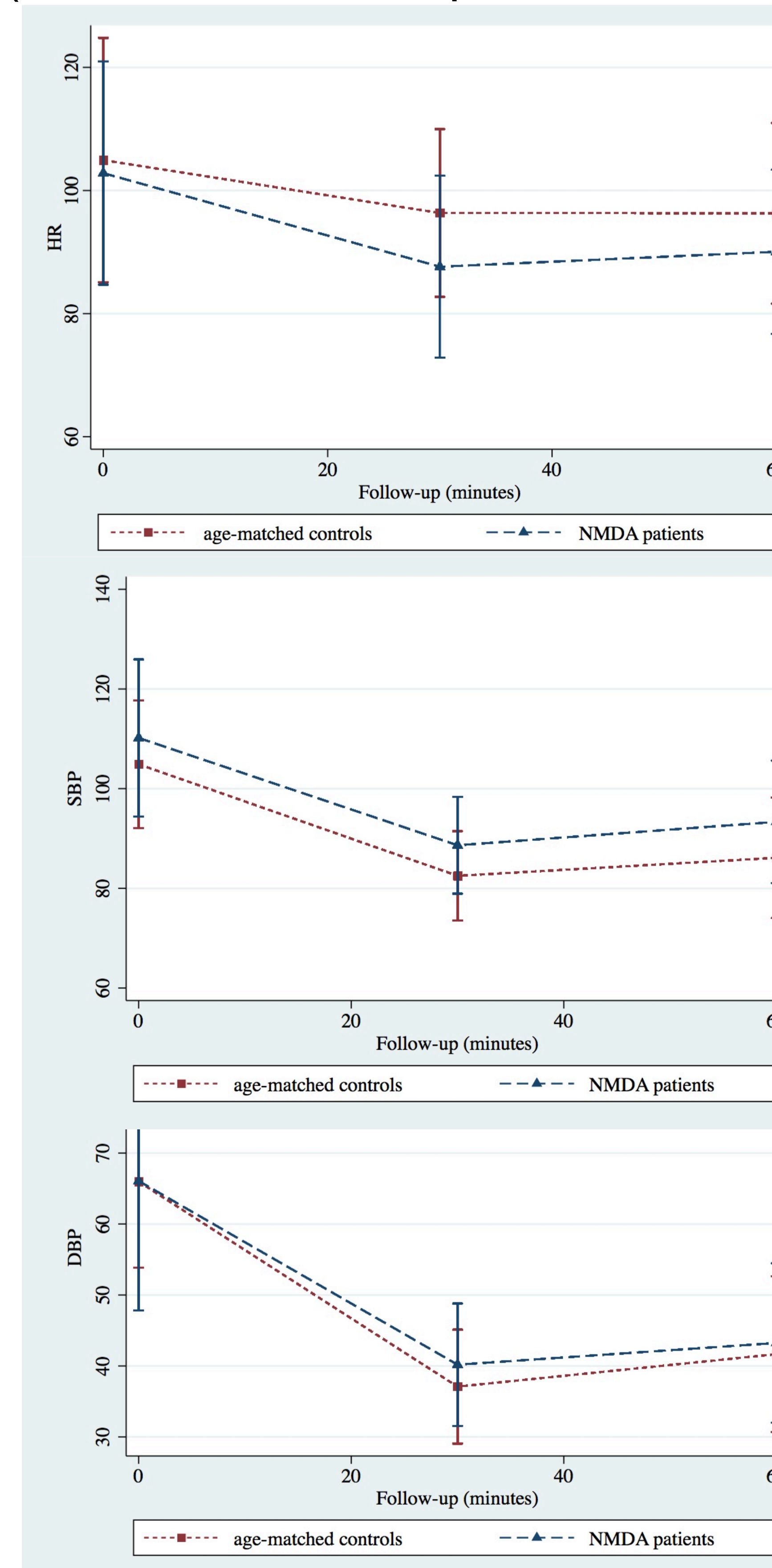
- **Anti-NMDA Receptor (NMDAR) Encephalitis** is caused by auto-antibodies that target the NMDAR
  - A leading cause of autoimmune encephalitis in children
- The NMDAR is commonly targeted by anesthetic agents, but there are few case reports of children with anti-NMDAR encephalitis receiving anesthesia and no case series
- We hypothesize that these children are potentially vulnerable to hemodynamic (HD) instability under anesthesia

## Methods

- **Retrospective chart review**
  - 30 anesthetics (19 patients)
    - 20 Propofol for MRI
    - 3 Dexmedetomidine for MRI
    - 6 Volatile anesthetics with narcotic for operative procedures
  - Age-matched controls
    - Propofol for MRI
- **Primary outcome:** HD instability
- **Primary analytic endpoints:**
  - heart rate (HR)
  - systolic and diastolic blood pressures (SBP & DBP)
  - respiratory rate (RR)
  - oxygen saturation (SAT)
  - temperature (TEMP)

## Results

- **One child suffered an arrhythmia, leading to sudden death within 24 hours post-anesthesia**
  - Otherwise, no exacerbations of symptoms during hospital stay or prolonged PACU stay compared to controls
- **Statistically significant decreases in HR, SBP, and DBP at 15, 30, 45, 60 minutes under anesthesia, when compared to baseline (little difference compared to controls)**



**Tables a-c:** statistically significant decreases in HR, SBP, and DBP in both control and study patients at 30 and 60 minutes. There were no statistically significant changes in RR, SAT, or TEMP from baseline.

## Discussion

- Although there is a **statistically significant decrease in HR and blood pressures** in children with anti-NMDAR encephalitis receiving anesthesia, **this decline is anticipated and overall not clinically relevant**
- There is very little difference in physiologic response between children with anti-NMDAR encephalitis and controls
- In the case of sudden death, that child presented much later in the disease process
- This data suggests that **anesthesia** (with avoidance of NMDAR antagonists) **is relatively safe** in this population. However, **late presentation with severe symptoms may be a risk factor** for post-op autonomic instability
- **Need for multidisciplinary collaboration** on imaging **workup protocol** so as to minimize exposure to anesthesia in patients at high-risk for autonomic instability
  - **Is full-body MRI really necessary?**

## References

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2. Armangue T, Titulaer MJ, Málaga I, et al; Spanish Anti-N-methyl-D-aspartate Receptor (NMDAR) Encephalitis Work Group. Pediatric anti-N-methyl-D-aspartate receptor encephalitis—clinical analysis and novel findings in a series of 20 patients. *J Pediatr.* 2013;162(4):850-856.e2.
3. Sato Y1, Kobayashi E, Murayama T, Mishina M, Seo N. Effect of N-methyl-D-aspartate receptor epsilon1 subunit gene disruption of the action of general anesthetic drugs in mice. *Anesthesiology.* 2005 Mar;102(3):557-61.