Acute Otitis Media in Children Prior to Cleft Palate Repair

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Abstract

Question: Are children more prone to acute otitis media prior to cleft palate repair?

- TriNetX United States Collaborative Network
  - Patients < 1 y/o with unrepaired CP (CP-NR); patients < 1 y/o without CP (NoCP) - 6 month outcomes
- 3,522 patients per cohort; mean age = 0.1 years (SD = 0.3)
  - CP pts = more likely to develop/require:
    - OME (N=1,291, 35.7% vs. N=81, 2.3%, OR=24.6, 95% CI=19.5-21.0, p<0.001)
- CP-NR patients were **not more likely to develop AOM** vs. matched Non-CP patients (N=309, 8.8% vs. N=318, 9.0%, OR=1.0, 95% CI=0.8-1.1, p=.707)

Introduction

- Acute otitis media (AOM), otitis media with effusion (OME)
  - Primarily caused by Eustachian tube (ET) dysfunction[2,3]
- Palatal muscle function, ET opening strength weakened by CP[4]
- Most CP children in the US receive palatoplasty[5]

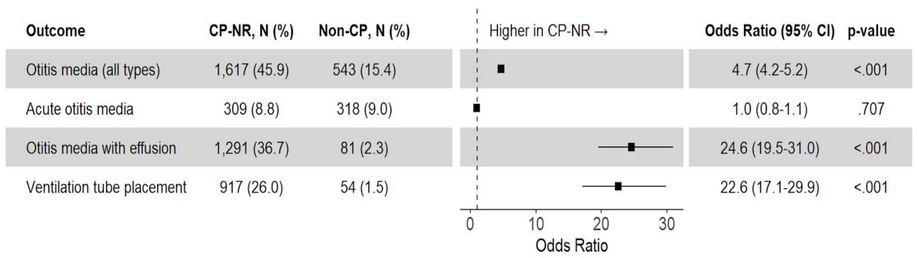
Methods

- TriNetX United States Collaborate Network
  - Retrospective data, ~68 hospitals
    - ICD-10 codes (CP, CP procedures, AOM, OM, OME)
    - 1:1 propensity score matching, p < 0.05

Table 1: Demographics after propensity score matching

	After Propensity Score Matching			
Demographics	**CP-NR**	**Non-CP**	**SMD**	**p value**
Total Number of Patients	3,522	3,522	--	--
Age at Index, mean ± SD	0.1 ± 0.3	0.1 ± 0.3	<0.001	1
Sex, N (%)				
Female	1,523 (43.2)	1,523 (43.2)	<0.001	1
Male	1,636 (46.5)	1,636 (46.5)	<0.001	1
Unknown Sex	363 (10.3)	363 (10.3)	<0.001	1
Race, N (%)				
American Indian or Alaska Native	15 (0.4)	15 (0.4)	<0.001	1
Asian	185 (5.3)	185 (5.3)	<0.001	1
Black or African American	293 (8.3)	293 (8.3)	<0.001	1
Native Hawaiian or Other Pacific Islander	46 (1.3)	46 (1.3)	<0.001	1
White	2,096 (59.5)	2,096 (59.5)	<0.001	1
Other Race	309 (8.8)	309 (8.8)	<0.001	1
Unknown Race	578 (16.4)	578 (16.4)	<0.001	1
Ethnicity, N (%)				
Hispanic or Latino	618 (17.5)	618 (17.5)	<0.001	1
Not Hispanic or Latino	2,076 (58.9)	2,076 (58.9)	<0.001	1
Unknown Ethnicity	828 (23.5)	828 (23.5)	<0.001	1

Figure 1: Odds Ratios of outcomes for CP-NR and Non-CP cohorts



Results

- 3,522 patients for the CP-NR vs non-CP cohort
- CP-NR patients = more likely to:
  - Require ventilation tubes (OR=21.8, 95% CI=16.8-28.2, p<.001; Figure 1)
  - Already have ventilation tubes (OR=21.2, 95% CI=18.9-23.8, p<.001)
  - Have OME (OR=10.7, 95% CI=9.6-11.9, p<.001)
  - **Do not have a higher risk of AOM (OR=1.0, 95% CI=0.8-1.1, p=.707)**

Discussion

- Higher CP-NR OME rates = short, flat ETs, hypoplastic palate muscles[4]
- Ventilation tube placement = almost universal in American CP children
- The incidence of AOM did not differ significantly between NoCP and CP-R groups
- Ventilation tube placement for AOM is not typically part of CP care
- Parents don't need to be concerned about higher risk of AOM in these infants
- Limitations: Propensity score-matching, no international data included, retrospective study, ICD-10 identifiers

Conclusion

- TriNetX findings emphasize otologic vulnerability of CP-NR and CP-R children.
- AOM risk is not statistically significant
- Placing ventilation tubes before cleft palate repair for the purpose of preventing AOM is not advisable
- Tube otorrhea in children with unrepaired CP = noninfectious, likely reflect open ETs as a conduit from the nose

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