Recent Trends of Complicated Pediatric Acute Rhinosinusitis: A Retrospective Cohort Study

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Introduction

- In complicated acute bacterial rhinosinusitis (ABRS), complications including orbital or intracranial extension/abscess, and vascular involvement, necessitate timely medical and surgical intervention.[1,4]
- Coronavirus Disease-2019 (COVID-19) has been found to be associated with lower respiratory co-infections/supra-infections, especially in the pediatric population. However, it remains unclear what, if any role COVID-19 plays in development of complicated pediatric sinusitis.[2]
- ABRS is typically caused by a superimposed bacterial infection proceeded by an initial viral infection, raising further questions surrounding the contribution of SARS-CoV-2 itself to the development and severity of pediatric ABRS.[3,5]
- Overall, there is a paucity of literature surrounding the effects of COVID-19 on the development, severity, and management of pediatric complicated ABRS.

Objectives

- This study aimed to examine trends in pediatric complicated ABRS during the COVID-19 pandemic, evaluating the change in incidence, complications, and management patterns.

Methods

- A retrospective cohort study was conducted using data from McMaster University Medical Centre on pediatric patients with a diagnosis of sinusitis or sinusitis complications from 2018 to 2022.
- Data were collected on patient demographics, sinus disease extent, length of hospital stay, antibiotic administration, time to surgery, and complication type.
- Means, standard deviations, and frequencies were used to summarize data.
- Differences between years (2018-2022) were compared using chi-squared and one-way ANOVA tests.

Results

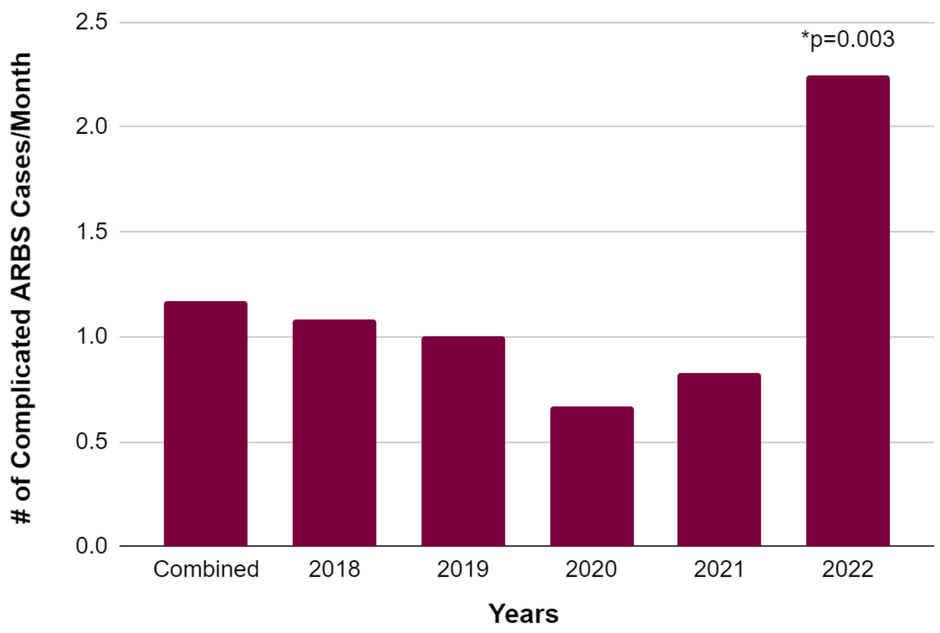

Figure 1: Cases of Complicated Acute Bacterial Rhinosinusitis Before and During the COVID-19 Era

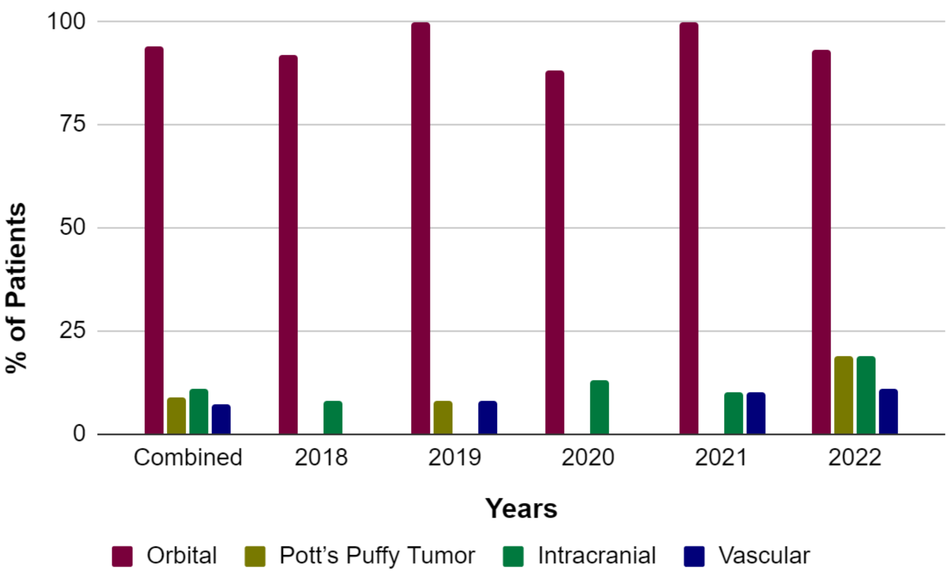

Figure 2: Distribution of Acute Bacterial Rhinosinusitis Complications

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Results (cont'd)

- A consecutive series of 97 patients were identified, of which 77 met the inclusion criteria.
- Patients had a mean age of 7.6 ± 4.4 years, were mostly male (69%) and imaging revealed multifocal (95%) and bilateral (59%) sinus disease.
- No COVID-19 co-infections were reported.
- Mean hospital stay was 7.7 ± 11.3 days, with no significant difference across years.
- 44% of patients required surgery, with a mean time to surgery of 1.7 ± 2.1 days. There was no significant difference in these parameters across years.
- The number of complicated ABRS cases/month significantly increased in 2022 (2.3 vs. average of 1.2, $p<0.05$).
- The most common complication was orbital involvement (94%), with no significant difference in the distribution of complication types over the study years.

Conclusions

- Despite the similarity in distribution of complications, need for surgery, and time to surgery for ABRS in recent years, there is currently a potential emergence of increased overall incidence of sinusitis with complications.

Future Directions

- Larger sample size with evaluation of significant trends across multiple centers.
- Examination of the role of previous and active COVID-19 infection with complicated ARBS.
- Investigation of other possible etiologies for the noted increased incidence of complicated ARBS observed in 2022 compared to previous years.

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