Impact of COVID- 19 Omicron exposure or disease on children with nephrotic syndrome

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THE CHILDREN'S HOSPITAL AT SAINT PETER'S UNIVERSITY HOSPITAL
A MEMBER OF SAINT PETER'S HEALTHCARE SYSTEM

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INTRODUCTION

- COVID-19 infection has reached pandemic proportions since 2020
- Found to have high morbidity and mortality rate in early pandemic times
- Immunodeficiency is a known risk factor for worse outcomes
- Idiopathic Nephrotic Syndrome (INS) is a renal disease considered to be immunological in etiology with patients on chronic immunosuppressive therapy (IT)

BACKGROUND

Authors	Year published	Results
Marlais et al	2020	▪ Children who had COVID-19 on IT, experienced a milder disease course and suggested no additional strict social distancing ▪ Was done during the Wild and Delta serotype waves
Morello, W., Vianello, F.A., Proverbio, E. et al.	2022	▪ Meta-analysis examining COVID-19 in Italy from 2019 – 2021 ▪ Transmission rate was low ▪ Risk of relapse was not increased during the COVID-19 pandemic ▪ No COVID-19 symptoms where reported in patients who where treated with (B-cell depleted therapy)

AIM

- To examine if covid-19 infection lead to more severe symptoms in children with nephrotic syndrome in our patient population
- To examine if covid infection increase the relapse rate in children with nephrotic syndrome in our patient population.
- To see how if covid-19 infection increases the relapse rate in patient who received B-cell therapy has higher rate of relapse

METHODS

- The study was approved by Institutional Review Board at Saint Peter's University Hospital
- Retrospective Cohort Study
- Inclusion Criteria: ICD 10 code of Nephrotic syndrome from SPUH
- Statistical Analysis:
  - Chi Square analysis
  - Odds Ratio
  - Relative Risk

Step 1
- Patients belong to SPUH Nephrology clinic
- Inclusion criteria : Patients diagnosed with nephrotic syndrome and or history of nephrotic syndrome through Athena EMR

Step 2
- IRB approval – Was able to contact parents of the patients to ask question on the Survey
- Obtained COVID-19 exposure/Vaccination status

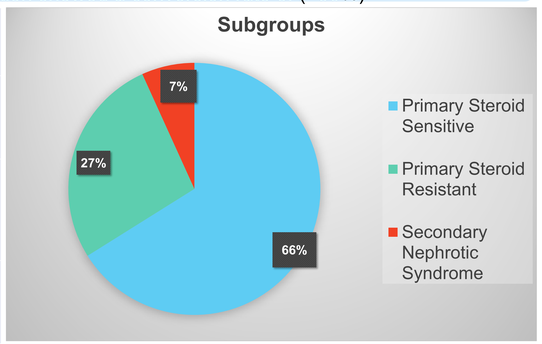
Step 3
- Reviewed Athena charts for medications and relapse history
- Collected Ancillary data including comorbidity and hospitalizations

RESULTS

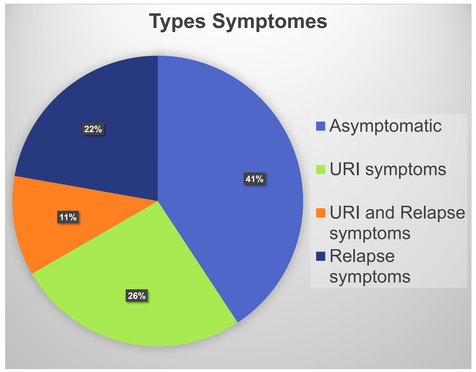
Study Population

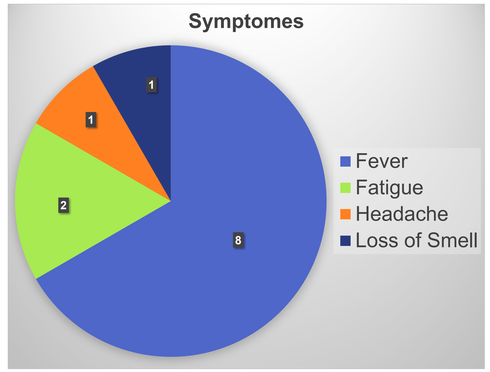
59 total patients in the study
32 / 59 of the participants have been exposed to someone with COVID +
18/32 (56%) developed a positive test / disease after exposure
Prior Studies in General Population showed a conversion rate of (~30%) [1,2,3]

Medication	Out of 18
Steroids + MMF + Tac	7
Medications + Rituximab	7
No medications	4



Symptoms





Severe/Hospitalization : 2/18

- **Hospitalized unrelated to COVID-19**
- **BOTH was due to uncontrolled relapse**
- **ONE had minor URI symptoms**
- **Stayed on hospital for 3 days**

Nephrotic Syndrome Relapse in Relation to COVID-19 infection

	Relapse +	Relapse -	Total
COVID + Test	6	12	18
COVID - Test	14	27	41
Total	20	39	**59**

Odds/ Ratio	C.I	Relative Risk	C.I
0.98	3.14 – 7.08	0.96	0.3 – 3.18

RESULTS

Rituximab (B-cell depleting therapy) on relapse rates

	Relapse +	Relapse -	Total
COVID +	4	3	7
COVID -	4	1	5
Total	8	4	**12**

Odds/ Ratio	C.I	Relative Risk	C.I
0.33	4.8 – 0.023	0.71	0.04 – 10.3

CONCLUSION

- **Nephrotic Syndrome Relapse in relation to COVID 19**
  - There is no significant difference of relapse between COVID + AND COVID – groups.
- **Those who received B-cell depleting therapy**
  - There is no significant difference of relapse rates between COVID + AND COVID
- **Symptom Severity**
  - Does not increase the severity of the disease as compared to the prior study
- **Our study is different from the prior metanalysis as most of the our cases where during the omicron wave**
- **Our date showed there is a slightly increased risk of developing disease after exposure compared to general population.**

LIMITATION

- **Single Center study**
  - Role in utilizing a national database
- **Power of this study is small**
  - Small sample size means the power of this study is small
  - High p-value, shows low statistically significant
  - OR is not significant as 95% CI include 1
- **To be more statistically significant, more participants are required**

RESOURCES

1. Morello, W., Vianello, F.A., Proverbio, E. et al. COVID-19 and idiopathic nephrotic syndrome in children: systematic review of the literature and recommendations from a highly affected area. Pediatr Nephrol 37, 757–764 (2022). https://doi.org/10.1007/s00467-021-05330-2
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