

Symptomatology of SARS-CoV-2 versus Seasonal Coronavirus Infection in Healthy Young Children



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1 Introduction

- Exposure to human coronaviruses (hCoV) occurs repeatedly from early life onwards
- The novel SARS-CoV-2 has established itself in the human population similar to other hCoVs
- Limited data exist on how SARS-CoV-2 symptomatology compares to hCoV infections in healthy children

2 Objective

To determine symptom burden and clinical course of SARS-CoV-2 infections compared to seasonal hCoVs infections in early life.

3 Methods

Study design: prospective cohort study, VIOOL study

- 228 healthy children <4 years
- Follow-up: 16 consecutive weeks
- Period: winters of 2021-2024
- Daily symptoms logs and weekly nasal swabs irrespective of symptoms
- PCR test for a broad respiratory virus panel including SARS-CoV-2, OC43, NL63 and 229E

Statistical analyses

- Alphacoronaviruses (NL63+229E), OC43 and SARS-CoV-2
- Symptom burden compared in the three groups
- Association between symptom burden and type of hCoV was assessed using mixed effects logistic regression

4 Symptomatology of hCoV infection episodes

	SARS-CoV-2 (N = 78)	OC43 (N = 149)	NL63 + 229E (N = 46)	P val
Occurrence of ARI	37 (49.33)	79 (57.25)	19 (44.19)	0.25
Symptom prevalence	Number (%)			
Runny nose	51 (65.38)	104 (69.80)	24 (52.17)	0.09
Coughing	45 (57.69)	86 (57.72)	22 (47.83)	0.47
Shortness of breath	7 (8.97)	23 (15.44)	1 (2.17)	0.03
Wheezing	17 (21.79)	33 (22.15)	6 (13.04)	0.39
Ear pain	2 (2.56)	12 (8.05)	2 (4.35)	0.22
Fever	22 (28.21)	35 (23.49)	6 (13.04)	0.15
GI symptoms	8 (10.26)	25 (16.78)	5 (10.87)	0.32
Behavioural changes	Number (%)			
Crying	21 (26.92)	34 (22.82)	7 (15.22)	0.32
Irritability	20 (25.64)	47 (31.54)	10 (21.74)	0.36
Difficulty falling asleep	19 (24.36)	50 (33.56)	9 (19.56)	0.12
Less playing	18 (23.08)	29 (19.46)	5 (10.87)	0.24
Less eating	30 (38.46)	45 (30.20)	15 (32.61)	0.45
Cumulative severity score	Median (IQR)			
	41.00 (21.50-67.00)	43.00 (21.25-75.50)	49.00 (27.50-79.50)	0.29
Episode length	Median (IQR)			
	8.50 (6.75-10.82)	11.00 (7.00-13.28)	9.00 (5.00-12.14)	0.32

GI symptoms include vomiting and diarrhoea. Chi-square test for occurrence of ARI and all symptoms and behavioural changes except for shortness of breath and ear pain, for which Fisher's exact test was done due to low numbers. Kruskal-Wallis test was performed for cumulative severity score and episode length.

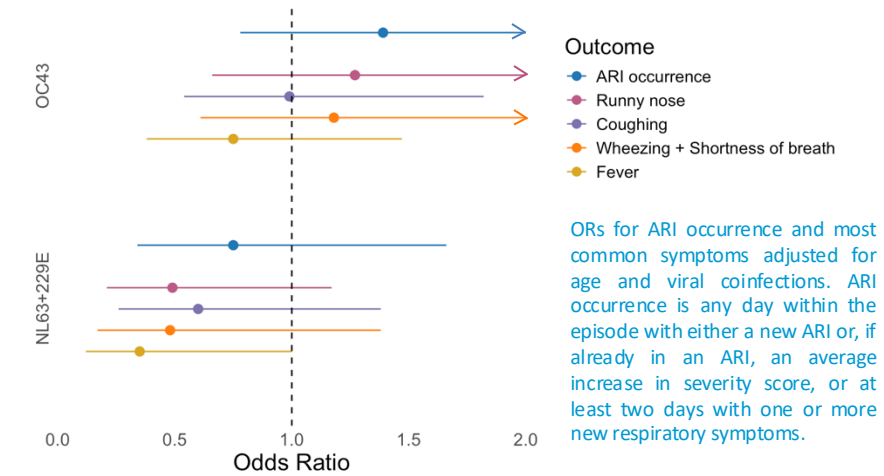
Abbreviations

ARI: acute respiratory illness. CI: confidence interval. GI: gastrointestinal. hCoV: human coronavirus. IQR: inter quartile range. OR: odds ratio. PCR: polymerase chain reaction. SARS-CoV-2: severe acute respiratory syndrome coronavirus 2.

Results

- 273 hCoV infections detected in 188 children during 3540 person-weeks of observation
- hCoV incidence rate was 7.7 per 100 person-weeks (95%CI: 6.8-8.6)
- Only 6 medically attended hCoV infections occurred and no hospitalizations
- 78 hCoV infections had no symptoms in the week around the swab

hCoV outcomes compared to SARS-CoV-2



5 Conclusions

- Young children acquire hCoV infections on average every 13 weeks during winter
- There is no difference in symptoms and severity between SARS-CoV-2 and other hCoV infections

These findings are reassuring as seasonal coronaviruses are associated with limited long-term health burden in children