Procedural Interventions and Outcomes in Hospitalized Children with COVID-19

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INTRODUCTION

- The coronavirus disease (COVID-19) pandemic continues to be a global threat, particularly in the United States.
- COVID-19 in hospitalized children tends to be less severe and associated with lower mortality compared to adults.
- There is a paucity of data regarding the need for procedural interventions in children with COVID-19.
- The objective of this study was to evaluate procedural interventions and outcome of hospitalized children with COVID-19 admitted to United States (US) medical centers.

METHODS

The Vizient Clinical Database was queried for in-patient hospitalization of children (0-18 years) with ICD-10 diagnosis of COVID-19 between March and October 2020. Clinical outcome measures included demographics, length of stay, rate and type of common procedural interventions and in-hospital mortality.

Demographics

Demographics	Children N=4,227
Sex, No (%)	
Female	2,263 (53.5)
Male	2425 (46.5)
Age, No. (%)	
0-3 years	1,062 (25.1)
4-12 years	952 (22.5)
13-18 years	2213 (52.4)
Race, No. (%)	
Caucasian	1,574 (37.2)
African American	1027 (24.3)
Asian	73 (1.7)
Ethnicity, No. (%)	
Hispanic origin	1642 (38.8)
Payer, No. (%)	
Commercial	976 (23.1)
Medicare/Medicaid	2,997 (70.9)

Comorbidities

Comorbidities, No. (%)	Children N=4,227
Hypertension	183 (4.3)
Diabetes	109 (2.6)
Obesity	485 (11.5)
Anemia	460 (10.9)
Renal failure	35 (0.8)
Chronic pulmonary disease	573 (13.6)
Congestive heart failure	71 (1.7)
Coagulation deficiency	359 (8.5)
Liver disease	77 (1.8)

Procedural interventions in pediatric patients with COVID-19

Procedure	Cases (n)	Mean LOS (+/- STD)	Mortality (n)	Mortality (%)
Swan-ganz catheterization	57	28.4 +/- 33	5	8.77
Respiratory intubation and mechanical ventilation	335	18.2 +/- 23	29	8.66
Blood Transfusion	330	13.2 +/- 19	16	4.85
Enteral and Parenteral Nutrition	124	24.7 +/- 28	10	8.06
Tracheostomy	17	47.4 +/- 27	0	0.00
Bronchoscopy	34	47.4 +/ 46	3	8.82
Spinal tap, diagnostic	203	7.7 +/- 15	1	0.49
Thoracentesis or chest drainage	39	26.4 +/- 36	5	12.82
Vascular catheterization (excluding heart)	300	19.6 +/- 26	22	7.33
Hemodialysis	18	32.7 +/- 43	3	16.67
Upper gastrointestinal endoscopy	21	28.8 +/- 45	1	4.76
Gastrostomy tube	14	58.6 +/- 48	1	7.14
Colonoscopy and biopsy	7	11.1 +/- 11	0	0.00
Proctoscopy and anorectal biopsy	6	20.0 +/- 33	0	0.00
Appendectomy	81	4 +/- 3	0	0.00
Abdominal paracentesis	22	22.0 +/- 24	1	4.55

Clinical Outcomes

Clinical Outcomes	Children N=4,227
In-hospital mortality, No. (%)	39 (0.9)
Length of hospital stay (mean days)	6.2 ± 16.0
Intensive care unit admission, No. (%)	1,370 (32.4)
Respiratory intubation and mechanical ventilation, No. (%)	392 (9.3)
Discharge status, No. (%)	
Home	3,750 (89.0)
Skilled nursing facility	8 (0.2)
Inpatient rehabilitation facility	38 (0.9)
Long-term care hospital	4 (0.1)
Hospice	5 (0.1)

RESULTS

- 4,227 hospitalized pediatric patients with COVID-19
- Mean Length of Stay: 6.2 +/- 16 days
- In-hospital mortality: 0.9%
- Overall mortality for patients requiring any procedural intervention: 5.5%

CONCLUSION

- Retrospective analysis of hospitalized pediatric patients with COVID-19
- Most common procedural interventions were:
  - Respiratory intubation
  - Central venous catheter insertion
  - Diagnostic spinal tap
- **In-hospital mortality increased dramatically with the need for any procedural interventions.**