Increased Incidence of Complicated Appendicitis in Patients with Neurodevelopmental Disabilities

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BACKGROUND

Disability Disparities

- Patients with disabilities experience numerous disparities within the healthcare system.
- More likely to:
  - Have chronic illness and report being in poor health *(1, 2)*
  - Have unmet medical, dental, and prescription needs *(3)*
  - Have higher rates of post-op complications *(4, 5)*
- To our knowledge, no other studies have evaluated disparities in an NDD population within Emergency General Surgery

Appendicitis

- One of the most common reasons for admission to surgical floor *(7)*
- Most common abdominal procedure performed in the pediatric population *(8)*

METHODS

Inclusion criteria

- Admission for acute appendicitis at one of 11 acute care hospitals in the largest municipal hospital system in the United States between Jan 1, 2018 - Dec 31, 2021
- Documented history of NDD by ICD-10

Exclusion criteria

- Age over 50
- Patients with physical disabilities only, verified by chart review
- Incomplete records

Retrospective Review

- Study patients were enrolled and matched to controls in a 1:2 ratio
- Uncomplicated appendicitis - inflamed appendix without signs of necrosis or perforation
- Complicated appendicitis - progressed to transmural necrosis and/or perforation

OBJECTIVE

Using appendicitis as a surrogate for access to surgical care, we aimed to determine whether patients with documented neurodevelopmental delay (NDD) presented with higher rates of complicated appendicitis compared to those without NDD.

ICD-10 CODES

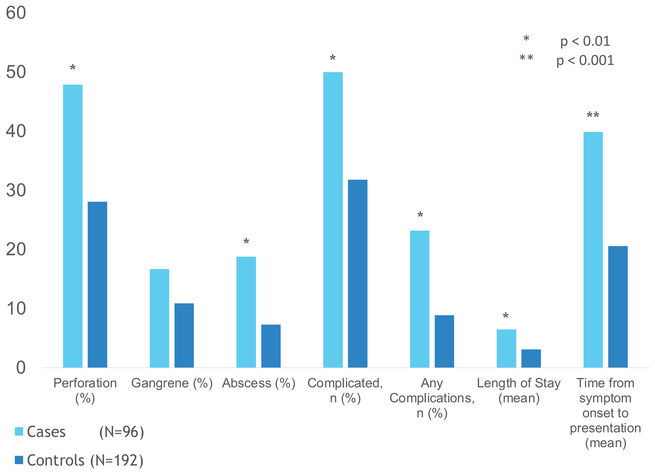
F70 - F79	Intellectual disabilities of varying range
F80-F89	Pervasive and Specific Developmental Disorders (F84 includes autism)
G80-83	Cerebral palsy and other paralytic syndromes
Q00-Q07	Congenital malformations of the nervous system
Q90-Q99	Chromosomal abnormalities

DISABILITIES

AUTISM	28
DEVELOPMENTAL DELAY	13
SPEECH DELAY	33
LEARNING DISABILITY	13
INTELLECTUAL DISABILITY	12
CEREBRAL PALSY	1

RESULTS

OUTCOMES



DEMOGRAPHICS

	Cases (N=96)	Controls (N=192)	p-value
Sex, n (%)			0.93
Male	67 (69.8)	133 (69.3)	
Female	29 (30.2)	59 (30.7)	
Age, mean (SD)	10.6 (8.6)	10.5 (8.4)	0.92
Race/Ethnicity, n (%)			0.94
Non-Hispanic White	3 (3.2)	5 (2.7)	
Non-Hispanic Black	18 (19.2)	35 (18.7)	
Asian	3 (3.2)	9 (4.8)	
Hispanic	70 (74.5)	138 (73.8)	
Comorbidities, n (%)	30 (31.3)	50 (26)	0.35

COMBORBIDITIES

	Cases (N=96)	Controls (N=192)	p-value
Any Comorbidities, n (%)	30 (31.3%)	50 (26%)	0.35
Asthma	16	28	0.77
Cardiovascular	2	3	0.87
Immunological	**17**	**0**	**0.001**
Eczema	11	0	
Allergy	6	0	
Other	1	0	
Neurological	**3**	**7**	**0.02**
Seizures	2	4	
Other	0	2	
Endocrine/Metabolic	6	3	0.07
Renal/GU	1	1	0.80
Psychiatric	0	3	0.22
Gastrointestinal	1	1	0.80
Heme	2	0	0.11

COMPLICATIONS

	Cases (N=96)	Controls (N=192)	p value
Any Complications, n (%)	**22 (23.2%)**	**17 (8.9%)**	**0.001**
Post-Operative Abscess	10	8	
ICU Admission	9	4	
Sepsis	4	3	
Return to OR	4	1	
Readmission	4	5	
Ileus	4	5	
Wound Infection	4	2	
Seizure	2	0	
Misdiagnosis	2	0	
Other	1	3	

CONCLUSIONS

Patients with NDD present **significantly more often with complicated appendicitis** compared to patients without NDD.

Patients with NDD have **longer lengths of stay**, and **higher rates of post-op complications.**

Could be due to a **delay in presentation**, as indicated by the longer duration of symptoms prior to admission (30.4 hrs vs. 46.8 hrs).

Further studies evaluating disparities in this cohort by functional status are warranted.

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