Anxiety Disorders in a Clinical Cohort of Children with Down Syndrome and Behavioural Problems

Luke D. Kardell[1,2], Megan Clarke[1], George T. Capone[1,3]

[1]Department of Neurodevelopmental Medicine, Kennedy Krieger Institute, Baltimore, MD; [2]School of Medicine, Griffith University, Southport, QLD Australia; [3]Department of Pediatrics, Johns Hopkins University, Baltimore, MD

BACKGROUND

- Previous studies point to a low prevalence of anxiety in children with Down Syndrome (DS) (1,2).
- However, there have been no studies attempting to characterize the clinical presentation of anxiety disorders in children with DS.
- Externalising manifestations of anxiety are common in children with other ID, and can be mistaken for other disorders (eg ADHD, depression)
- Externalising behaviors are well documented among children with DS (2-6)
- It remains to be seen whether the presence of anxiety is related to any of these difficult behaviors in children with DS

OBJECTIVES/AIMS

1) Report on the presence of anxiety disorders in a large clinical cohort of prepubertal children with DS presenting with behavioral problems to a specialist clinic,
2) Characterize and delineate maladaptive behaviors in these children based on their age, gender, cognitive function and presence of anxiety symptoms

DESIGN/METHODS

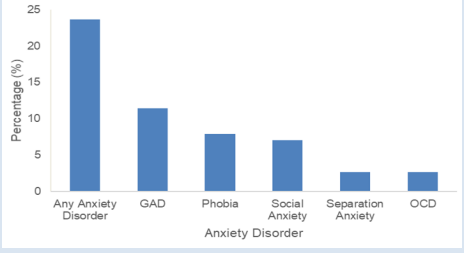
- Our study population was ascertained sequentially through initial visits by children 3-13 years to the Down Syndrome Clinic at the Kennedy Krieger Institute, between 2002 and 2008.
- Participants were classified by their predominant behavioral presentation at initial consultation (eg ADHD, Disruptive Behavior Disorder, Stereotypic Movement Disorder)
- Children with DS/Autism Spectrum Disorders were excluded from this study
- The Nisonger Child Behavior Rating Form (NCBRF) and Aberrant Behavior Checklist (ABC) were used to characterize behaviors.
- Finally, they were retrospectively classified by anxiety disorders and symptoms on chart review using the DSM-V and DM-ID

RESULTS

Table 1 –Demographics (t-test/Chi Square)

	DS/Behavioural (n=95)	DS/None (n=19)	Total (n=114)	p
Male [n(%)]	75 (78.9)	12 (63.2)	87 (76.3)	0.14
Age (Mean±SD)	7.1±2.6	6.6±2.1	7.0±2.5	0.5
DQ/IQ (Mean±SD)*	47.6±12.9	53.2±7.1	48.5±12.3	0.06
Anxiety Diagnosis				
Any	25 (26.3)	2 (10.5)	27 (23.7)	0.14
GAD	12 (12.6)	1 (5.3)	13 (11.4)	0.14
Phobia Disorder	8 (8.4)	1 (5.3)	9 (7.9)	0.36
Social Anxiety	7 (7.4)	1 (5.3)	8 (7.0)	0.64
Separation Anxiety	3 (3.2)	0	3 (2.6)	0.74
OCD	2 (2.1)	1 (5.3)	3 (2.6)	0.43

Figure 1 – Frequency of Anxiety Disorders



- No significant demographic differences were found between those with behavioral problems and those without (Table 1)
- In total, 27 (23.7%) were diagnosed with an anxiety disorder (Figure 1)
- Twenty-five (92.6%) of these had a co-occurring behavioral problem
- One diagnosis was met in 18 (66.7%) of those with anxiety disorders, and two diagnoses were met in 9 (33.3%)
- Participants with Anxiety disorders scored higher on Insecure/Anxious, and Self-Isolating/Ritualistic subscales of the NCBRF compared to those with Behavioral problems w/o anxiety
- No other NCBRF subscales were significantly different between those with anxiety or behavior problems (Table 2).
- The ABC Lethargy sub scale was also higher in participants w/ Anxiety disorders but did not reach significance

Table 2 – Behavioural Subscale Scores (ANCOVA controlling for age and gender)

	DS/Anxiety (n=27)[a]	DS/Behavioral/NO Anxiety (n=70)[b]	DS/NO Behavioral OR Anxiety (n=17)[c]	p	Post Hoc
NCBRF					
Compliant Calm	7.7 (2.4)	8.0 (2.9)	12.3 (8.6)	<0.001	a,b<c***
Adaptive Social	4.3 (1.4)	4.9 (1.9)	7.7 (2.1)	<0.001	a,b<c***
Conduct	15.4 (9.7)	15.0 (9.3)	5.7 (3.7)	<0.001	a, b>c***
Insecure/Anxious	7.2 (5.5)	3.2 (4.5)	2.7 (4.2)	<0.001	a>b***, c*
Hyperactive	12.5 (6.3)	15.0 (5.9)	5.5 (4.3)	<0.001	a,b>c***
Self-Injury/ Stereotypy	1.9 (2.4)	2.0 (2.9)	1.0 (1.8)	0.71	NS
Self-Isolating/ Ritualistic	7.4 (6.0)	4.6 (4.3)	2.4 (2.8)	0.007	a>b*, c***
Overly Sensitive	6.4 (2.9)	4.7 (3.0)	2.4 (1.7)	<0.001	a>c***, b>c*
ABC					
Irritability	13.2 (6.6)	11.3 (7.6)	2.2 (2.6)	<0.001	a, b>c***
Lethargy	9.6 (8.1)	6.2 (6.6)	1.2 (2.0)	0.003	a>c***, b>c*
Stereotypy	5.7 (5.7)	5.5 (5.3)	1.8 (2.4)	0.010	b>c*
Hyperactive	19.7 (9.0)	23.7 (10.5)	6.0 (7.2)	<0.001	a,b>c***
Speech	3.3 (3.1)	2.2 (2.8)	1.2 (2.1)	0.028	NS

*p<0.05, **p<0.01, ***p<0.005

CONCLUSIONS

- To our knowledge, this is one of the first studies investigating the presence and characterization of anxiety features in children with DS.
- The presentation of anxiety disorders appear different to other DS children with behavioral disturbances. Those with anxiety had similar externalizing behaviors to children with behavioral problems, however, scored higher on NCBRF internalizing scales and the ABC Lethargy scale
- The presence of anxiety should not be overlooked in children with DS presenting with behavioral problems.
- Future studies need to investigate evidence-based treatment options to manage anxiety in children with DS

REFERENCES

1. Whitney, et al. JIDR 2019
2. Myers et al. J Nerv Ment Dis 1991
3. Dykens EM. Ment Retard Dev Disabil Res Rev 2007
4. Peuschel et al. J Ment Defic Rev 1991
5. Capone et al. Am J Med Genet C Semin Med Genet 2006
6. Dykens et al. JIDR 2002

The authors have no COI to disclose

Kennedy Krieger Institute