



10-2015

Effects of Sertraline Treatment for Young Children with FXS

Andrew Ligsay

MIND Institute, University of California, Davis

Laura Greiss Hess

Department of Occupational Therapy, Dominican University of California, laura.hess@dominican.edu

Sarah Fitzpatrick

MIND Institute, University of California, Davis

Kerrie Lemons Chitwood

MIND Institute, University of California, Davis

Jonathan Polussa

MIND Institute, University of California, Davis

See next page for additional authors

Follow this and additional works at: <http://scholar.dominican.edu/all-faculty>



Part of the [Occupational Therapy Commons](#)

Recommended Citation

Ligsay, Andrew; Hess, Laura Greiss; Fitzpatrick, Sarah; Lemons Chitwood, Kerrie; Polussa, Jonathan; Siyahian, Salpi; and Hagerman, Randi, "Effects of Sertraline Treatment for Young Children with FXS" (2015). *Collected Faculty and Staff Scholarship*. 111.
<http://scholar.dominican.edu/all-faculty/111>

Authors

Andrew Ligsay, Laura Greiss Hess, Sarah Fitzpatrick, Kerrie Lemons Chitwood, Jonathan Polussa, Salpi Siyahian, and Randi Hagerman

Andrew Ligsay^(1,2), Laura Greiss Hess, PhD, OTR/L^(1,3), Sarah Fitzpatrick^(1,4), Kerrie Lemons Chitwood^(1,5), Jonathan Polussa⁽¹⁾, Salpi Siyahian⁽¹⁾, and Randi Hagerman, MD⁽¹⁾

(1) Pediatrics, MIND Institute, UC Davis, Sacramento, CA, (2) UC Davis School of Medicine, UC Davis, Sacramento, CA, (3) Department of Occupational Therapy, Dominican University of California, San Rafael, CA, (4) Department of Neuroscience, Ohio State University, Columbus, OH, (5) Department of Special Education, California State University, Monterey Bay, CA

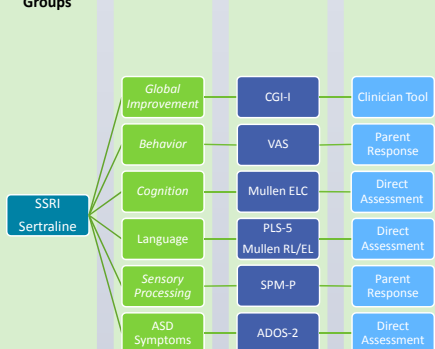
INTRODUCTION and PURPOSE

Selective serotonin reuptake inhibitors (SSRIs) help treat many of the neurotypic manifestations of fragile X syndrome (FXS) including anxiety, sensory processing challenges, and communication and intellectual deficits. However, the efficacy of SSRIs has not been previously studied in children with FXS under five-years-old. The purpose of this study was to elucidate group differences in behavior and developmental outcome measures for young children with FXS when treated with sertraline compared to placebo.

PARTICIPANTS and DESIGN

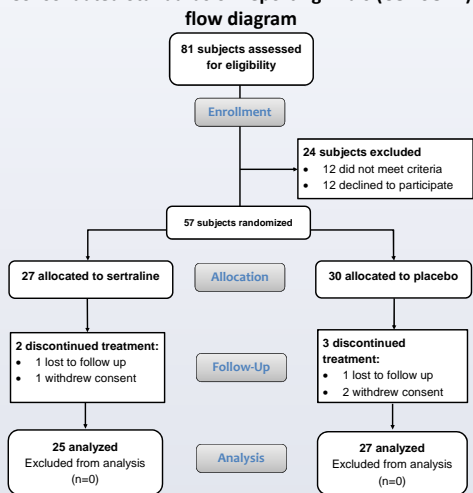
- 57 participants with FXS, ages 2 -6 years old (mean 3.9 years; SD 1.1)
- Randomized, 6-month, double-blind, placebo-controlled trial of sertraline (Zoloft)
- Baseline and post-treatment outcomes measured
- Primary outcomes:** Mullen Scales of Early Learning (MSEL) expressive language subscales and Clinical Global Impression Scale-Improvement (CGI-I)
- Secondary outcomes:** MSEL fine motor, visual reception, and receptive language subscales; Autism Diagnostic Observation Schedule, Second Ed. (ADOS-2); Visual Analog Scale (VAS); Sensory Processing Measure-Preschool (SPM-P); and Preschool Language Scale, Fifth Ed. (PLS-5)

Placebo vs. Treatment Groups



RESULTS

Consolidated Standards of Reporting Trials (CONSORT) flow diagram

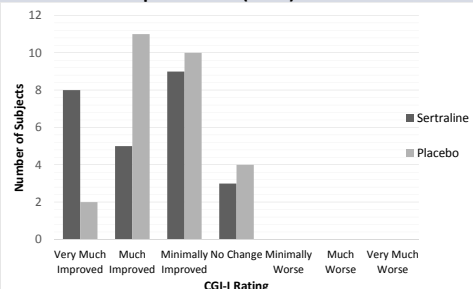


Primary Outcome Results

Variables	Sertraline			Placebo			P-value ^a
	Baseline	Follow Up		Baseline	Follow Up		
	N	Mean	SD	N	Mean	SD	
MSEL							
Exp Lang Raw Score	26	21.3	10.3	25	25.0	10.8	30
Exp Lang T-Score	27	25.8	11.7	25	25.8	10.9	30
CGI-I	27	--	--	25	2.3	1.1	30

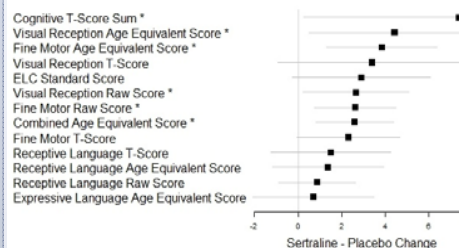
^a Adjusted significance level 0.016. MSEL – Mullen Scales of Early Learning; CGI-I – Clinical Global Impression Scale-Improvement

Distribution of Clinical Global Impression-Improvement (CGI-I) scores.



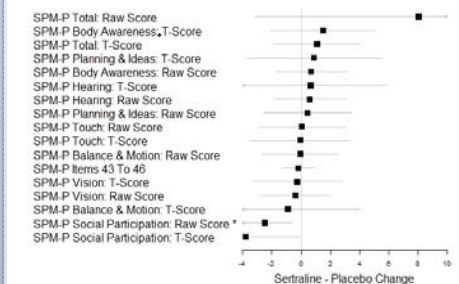
RESULTS

Effect Sizes of Sertraline on Mullen Scales of Early Learning Secondary Measures



Effect size are post treatment score difference estimates (sertraline minus placebo) adjusted for baseline measure, along with 95% CIs (arrows indicate CI length truncated for display). Asterisks indicate P < 0.05.

Effect Sizes of Sertraline on Sensory Processing Measure – Preschool (SPM-P)



Effect size are post treatment score difference estimates (sertraline minus placebo) adjusted for baseline measure, along with 95% CIs (arrows indicate CI length truncated for display). Asterisks indicate P < 0.05.

Comparison of Adverse Events

Variable	Sertraline	Placebo	P-value		
	No. of Patients	%	No. of Patients	%	
Severity					
No Moderate/Severe AE	12	46.15	15	51.72	0.7891
Any Moderate/Severe AE	14	53.85	14	48.28	
Drug Related					
No drug related AE	5	19.23	6	20.69	1
Any drug related AE	21	80.77	23	79.31	
Serious Adverse Event					
No	26	100	29	100	--
Adverse Event Status					
No Ongoing	21	26	80.77	89.66	0.4548
Any Ongoing	5	3	19.23	10.34	

CONCLUSIONS

- This is the first known controlled trial of sertraline in young children with FXS.
- No significant differences were observed in the MSEL expressive language subscales and CGI-I primary outcome measures for sertraline when compared to placebo.
- Secondary measures revealed significant improvement in social participation on the SPM-P. Areas of fine motor and visual perception were also significantly improved on the MSEL when compared to age equivalent subjects. *Post hoc* analysis combining all MSEL age-equivalent scores (expressive, visual, receptive and fine motor) showed overall significant improvement.
- Results suggest sertraline had significant positive effect on social improvements and overall development.
- Adverse events (AEs) were similar between sertraline and placebo groups. No significant differences in characteristics of AEs were observed between both groups.

SELECTED REFERENCES

Berry-Kravis, E. & Potanos, K. (2004). Psychopharmacology in fragile X syndrome – present and future. *Mental Retardation and Developmental Disabilities Research Reviews*, 10, 42-48.

Hagerman, R.J., Berry-Kravis, E., Kaufmann, W. E., Ono, M. Y., Tartaglia, N., Lachiewicz, A., Kronk, R., Delahunty, C., Hess, D., Visootsak, J., Picker, J., Gane, L., & Tranfaglia, M. (2009). Advances in the treatment of fragile X syndrome. *Pediatrics*, 123(1), 378-390.

Leigh, M.J.S., Nguyen, D.V., Mu, Y., Winarni, T.L., Schneider, A., Chechi, T., Polussa, J., Doucet, P., Tassone, F., Rivera, S.M., Hess, D., & Hagerman, R.J. (2013). A randomized double-blind, placebo-controlled trial of minocycline in children and adolescents with Fragile X Syndrome. *Journal of Developmental and Behavioral Pediatrics*, 34(3): 147-155.

Winarni, T.L., Chonchaiya, W., Adams, E., Au, J., Mu, Y., Rivera, S.M., Nguyen, D.V. & Hagerman, R.J. (2012) Sertraline may improve language developmental trajectory in young children with fragile X syndrome: A retrospective chart review. *Autism Research and Treatment*, 1-8.

ACKNOWLEDGEMENTS and CONTACT

- This study was funded by Health Resources and Services Administration (HRSA, #R40MC22641).
- Our sincerest thanks to the FXS families who participated in this study and to the FXS community for supporting this research.
- MIND Institute Sertraline Team: Lauren Bishop, Tasleem Chechi, Susan Harris, Andrea Schneider, Kylee Cook, Beth Goodlin-Jones, David Hessl, Pam Gallego, Louise Gane, Michele Ono and Julie Morcillo
- Contact: Andrew Ligsay (aligsay@ucdavis.edu)