Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplementary Appendix for

Endoscopic Treatment versus Shunting for Infant Hydrocephalus in Uganda

Contents:

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Research Team and Acknowledgements

Table S1. Post hoc analyses of outcomes at 12 months*

	Overall	Randomized to ETV/CPC	Randomized to VPS	Difference (95% confidence interval) for VPS compared to ETV/CPC †
BSID Cognitive, change from baseline	0 (-1, 4)	0 (-1, 4)	0 (-1, 4)	0 (-2, 1)
BSID Expressive Language, change from baseline	0 (-3, 2)	-1 (-3, 1)	0 (-3, 2)	1 (-1, 2)
BSID Receptive Language, change from baseline	-1 (-4, 2)	-1 (-4, 1)	-1 (-3, 2)	1 (-1, 2)
BSID General Motor, change from baseline	-0.5 (-3, 0)	0 (-3, 1)	-1 (-3, 0)	0 (-1, 1)
BSID Fine Motor, change from baseline	0 (-2, 3)	0 (-2, 3)	0 (-2, 3)	0 (-1, 2)
Normal brain volume at 12 months, N (%)	23 (24.5%)	10 (21.3%)	13 (27.7%)	6.4% (-11.0%, 23.7%)
Substantial brain growth at 12 months, N (%)	25 (26.6%)	8 (17.0%)	17 (36.2%)	19.1% (1.7%, 36.6%)
Head circumference, cm	48.9 (46.4, 51.1)	49.0 (47.5, 52.0)	48.0 (45.3, 50.8)	-1.6 (-3.0, -0.2)
Change in head circumference from baseline, cm	0.1 (-2.3, 2.8)	1.9 (-0.1, 4.7)	-1.7 (-4.3, 0.2)	-4.0 (-5.5, -2.5)

* Data are median (interquartile range) or number (percent). Twelve-month data for head circumference, BSID scores, and volumes were available on 47 patients in each treatment group (94 patients total).

† Hodges-Lehmann estimates and 95% confidence intervals were used for differences in medians and normal approximation for differences in proportions. Because of the use of the Hodges-Lehmann estimator, the estimated difference is not the crude difference in the medians.

Table S2. Patient characteristics at baseline for treatment as received*

	Overall	Received ETV/CPC (N=43)	Received VPS (N=57)
Age at randomization, months	3.1 (2.6, 4.1)	3.3 (2.2, 4.2)	3.1 (2.7, 4.0)
Sex, female	39 (39.0%)	16 (37.2%)	23 (40.4%)
Weight, kilograms	6.0 (5.0, 7.0)	5.6 (4.5, 7.0)	6.2 (5.4, 7.15)
Head circumference, cm	48.5 (45.2, 50.8)	48.5 (44.5, 50.0)	48.3 (45.5, 53.4)
Bayley Scales of Infant Development (BSID) Scaled Scores †			
BSID Cognitive	1 (1, 5)	1 (1, 5)	1 (1, 5)
BSID Expressive Language	3 (1, 6)	4 (2, 7)	2 (1, 5)
BSID Receptive Language	6 (1, 8)	6 (3, 9)	4 (1, 8)
BSID General Motor	3 (1, 5)	3 (1, 6)	2 (1, 4)
BSID Fine Motor	3 (1, 5)	4 (1, 6)	3 (1, 4)
Brain and CSF volumes			
CSF volume, cm^3	783 (570, 1050)	746 (559, 992)	790 (617, 1331)
Brain volume, z-score	-2.6 (-3.2, -1.9)	-2.6 (-3.2, -1.7)	-2.6 (-3.3, -2.0)
Normal brain volume	10/99 (10.1%)	5/42 (11.9%)	5/57 (8.8%)

* Data are median (interquartile range) or number (percent). Brain and CSF volume data were available for 42 ETV/CPC and 57 VPS infants. There were no significant between-group differences in the characteristics listed except for BSID Receptive Language (p=0.03, Mann-Whitney).

† BSID scaled scores range from 1 to 19 (higher scores indicate better performance).). Scores are scaled to general population mean of 10 and standard deviation (SD) of 3.

Table S3. Outcomes at 12 months for treatment as received *

	Overall	Received ETV/CPC	Received VPS	p-value†	Difference (95% confidence interval) for VPS compared to ETV/CPC ‡
Primary outcome					
BSID Cognitive	3 (1, 6)	4 (1, 7)	3 (1, 5)	0.65	0 (-1, 1)
Secondary outcomes					
BSID Expressive Language	2 (1, 5)	2 (1, 5)	3 (1, 5)	0.96	0 (-1, 1)
BSID Receptive Language	4 (3, 6)	5 (3, 6)	4 (3, 6)	0.51	0 (-1, 1)
BSID General Motor	1 (1, 3)	1 (1, 4)	1 (1, 2)	0.16	0 (0, 0)
BSID Fine Motor	4 (1, 7)	4 (1, 7)	3 (1, 6)	0.38	0 (-2, 0)
CSF volume, 12 months, cc	311 (97, 526)	520 (322, 704)	167 (77, 341)	<0.001	-307 (-412, -216)
Brain volume, 12 months, z-score	-2.3 (-3.3, -1.0)	-2.3 (-3.5, -1.0)	-2.3 (-3.2, -1.0)	0.49	0.2 (-0.5, 0.9)
Treatment failure	30 (30.0%)	15 (34.9%)	15 (26.3%)	0.39	-8.6% (-26.7, 9.6%)
Infection	4 (4.0%)	0 (0%)	4 (7.0%)	0.13	7.0% (0.1%, 14.8%)
All-cause mortality	6 (6.0%)	3 (7.0%)	3 (5.3%)	1.00	-1.7% (-11.3, 7.9%)
Post hoc outcomes					
BSID Cognitive, change from baseline	0 (-1, 4)	0 (-1, 5)	0 (-1, 4)		0 (-2, 1)
BSID Expressive Language, change from baseline	0 (-3, 2)	-1 (-5, 1)	0 (-2, 2)		1 (-1, 3)
BSID Receptive Language, change from baseline	-1 (-4, 2)	-1 (-5, 1)	0 (-3, 2)		1 (0, 3)

BSID General Motor, change from baseline	-0.5 (-3, 0)	-1 (-3, 2)	-1 (-3, 0)		0 (-1, 1)
BSID Fine Motor, change from baseline	0 (-2, 3)	0 (-2, 3)	0 (-2, 4)		0 (-1, 2)
Normal brain volume, 12 months, N (%)	23 (24.5%)	10 (25.0%)	13 (24.1%)		-1.0% (-18.5%, 16.7%)
Substantial brain growth at 12 months, N (%)	25 (26.6%)	6 (15.0%)	19 (35.2%)		20.2% (2.1%, 38.3%)
Head circumference, cm	48.9 (46.4, 51.1)	49.7 (48.2, 52.3)	47.9 (45.1, 50.1)		-2.6 (-3.9, -1.2)
Change in head circumference from baseline, cm	0.1 (-2.3, 2.8)	2.6 (0.3, 5.5)	-1.0 (-3.6, 0.3)		-4.4 (-5.9, - 2.9)

* Data are median (interquartile range) or number (percent). Twelve month data for head circumference, BSID scores, and volumes were available on 40 ETV/CPC patients and 54 VPS patients (94 patients total).

† P-values are Mann-Whitney test or Fisher's exact test.

‡ Hodges-Lehmann estimates and 95% confidence intervals were used for differences in medians and normal approximation for differences in proportions. Because of the use of the Hodges-Lehmann estimator, the estimated difference is not the crude difference in the medians.

Table S4. Outcome results for brain growth*

	Difference (95% confidence interval) for those achieving *normal brain volume* (N=23) compared to not	Difference (95% confidence interval) for those achieving *substantial brain growth* (N=25) compared to not
BSID Scaled Scores at 12 months		
BSID Cognitive	1 (0, 3)	1 (0, 3)
BSID Expressive Language	1 (0, 2)	1 (0, 2)
BSID Receptive Language	1 (0, 2)	0 (-1, 1)
BSID General Motor	2 (0, 2)	0 (0, 0)
BSID Fine Motor	3 (1, 5)	2 (1, 4)
Change in BSID Scaled Scores at 12 months from baseline		
BSID Cognitive, change from baseline	1 (-1, 3)	2 (0, 4)
BSID Expressive Language, change from baseline	0 (-3, 2)	0 (-1, 2)
BSID Receptive Language, change from baseline	0 (-2, 2)	0 (-2, 2)
BSID General Motor, change from baseline	1 (0, 3)	1 (0, 3)
BSID Fine Motor, change from baseline	3 (1, 4)	3 (2, 5)

* Hodges-Lehmann estimates and 95% confidence intervals were used for differences in medians. Because of the use of the Hodges-Lehmann estimator, the estimated difference is not the crude difference in the medians.