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Doaa Aly

Lori Erickson

Hayley S. Hancock

Johnathan Apperson

Kimberly J. Reid

See next page for additional authors

Authors

Doaa Aly, Lori Erickson, Hayley S. Hancock, Johnathan Apperson, Kimberly J. Reid, Jennifer A. Marshall, Girish S. Shirali, and Suma Goudar

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Doaa M. Aly, Lori Erickson, Hayley Hancock, Jonathan W Apperson, Kimberly Reid, Jennifer Marshall
Girish Shirali, Suma Goudar

Ward Family Heart Center
CHILDREN'S MERCY KANSAS CITY

UMKC School of Medicine

BEST CHILDREN'S HOSPITALS U.S.News RANKED IN 10 SPECIALTIES 2016-17

Background

- Our Cardiac High Acuity Monitoring program (CHAMP) utilizes video telemetry as an adjunct to monitor interstage single ventricle infants (SVI) at home
- Our objective is to develop and validate an objective clinical scoring system for video analysis, to identify SVI at reisk for clinical deterioration and unplanned hospital admissions (UHA)

Methods

- SVI monitored at home by CHAMP between March 2014- March 2018 were included and UHA was considered the primary outcome variable
- Scoring system was modeled after the pediatric early warning score (PEWS)
- Five candidate items were selected using local expert consensus to develop a pragmatic score for standardized video analysis

Score	Resp rate	Resp effort	Color	Behavior	Appearance
0	20-39	No accessory muscle use, no retractions	Pink or mild cyanosis	Playing/ sleeping appropriately, smiling and tracking parents	Expected appearance
1	40-49	Mild subcostal retractions	Pale	Sleepy, somnolent when not disturbed	Mild concern
2	50-59	Moderate subcostal retractions, flaring	Gray	Irritable, difficult to console	Significant concern
3	60-69	Suprasternal/ intercostal retractions	Mottled	Lethargic, floppy, reduced response to stimulation	
4	<20 or ≥70	Severe retractions, head bobbing, paradoxical breathing			

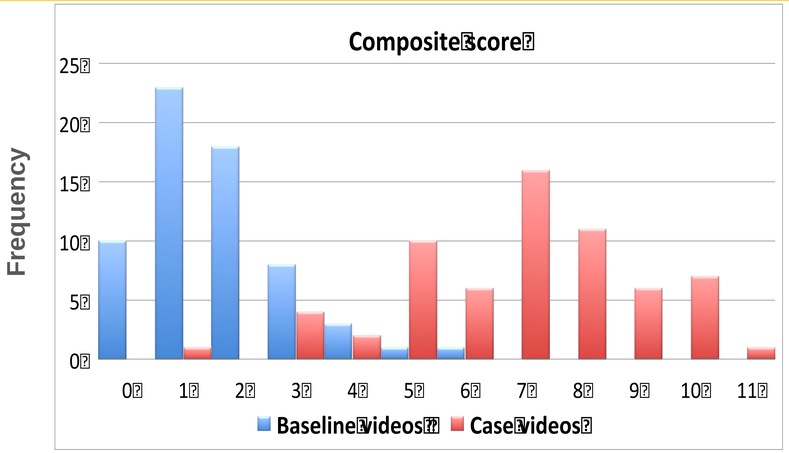
Methods (cont)

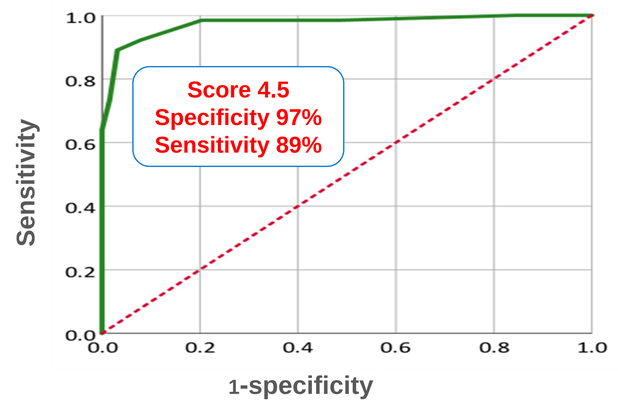
- Videos obtained within 48 hours prior to UHA (case videos) were compared to videos obtained at baseline
- Videos were retrospectively reviewed by a single, blinded rater
- A subset of 30 videos was reviewed by a second blinded rater for inter-observer reproducibility
- Mann Whitney and Mcnemar's tests were used for comparisons, ICC was used for reproducibility and AUC to establish a cut-off to predict UHA

Results

- 39 subjects with 64 UHA were included
- We compared a total of 64 case videos to 64 paired control videos
- 81% of the videos were deemed adequate for analysis
- Video scoring was feasible for 91.6% of all observations with 49 non scorable- items, due to inadequate lighting, distance or clothing.
- ICC for inter-reader reproducibility of video score items was > 0.9
- Individual score items were significantly higher in case videos compared to controls **(p<0.001)**
- Mean composite score incorporating the 5 video features ranged from 0- 15 with a mean score of 6.9 ± 2.1 for case videos vs 1.7 ±1.3 for control videos **(P< 0.001)**
- Area under the receiver operating characteristic curve for composite score was **0.97**
- A score of **4.5** provided specificity of 97% and sensitivity of 89% to predict UHA

	Baseline Videos n= 64	Case Videos n= 64	P-value
Composite Score	1.7 ± 1.3	6.9 ± 2.1	< 0.001





Conclusions

- We have developed a reproducible video telemetry score that predicts UHA in SVI
- Future directions involve prospective, multi- center validation of this tool

Disclosures

Authors of this work do not have any disclosures