Description of Diagnostic Testing in the Evaluation of Syncope

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Abstract

Background

Syncope, or the transient loss of consciousness, is a common and typically benign clinical problem in children and adolescents, affecting 15-20% of all children before the end of their second decade. The majority of tests ordered in otherwise healthy pediatric patients presenting with syncope have low diagnostic yield. The purpose of this study was to quantify the volume of tests and patient charges in a group of pediatric patients presenting for outpatient evaluation for syncope.

Methods

This was a retrospective review of a cohort of new patients seen in the Heart Institute Syncope Clinic at Cincinnati Children's Hospital Medical Center between 3/2011 - 4/2013. Patients seen in the Syncope Clinic were enrolled in a registry that collected demographic and clinical testing information regarding the population. The registry was used to describe the diagnostic testing in the evaluation of syncope. The electronic medical record was searched to determine whether each patient underwent cardiac (electrocardiogram (ECG), echocardiogram, or exercise testing) or neurologic (head CT/MRI or electroencephalogram (EEG)) testing from 3 months before to 3 months after their clinic visit. The patient charges for each of these tests were obtained through hospital billing records.

Results

442 patients were included for analysis. 91% were Caucasian and 65.6% were female. Median age was 15.1 years (8.1 – 21.2). Aside from a baseline ECG, 254 patients or 57% of the population received additional cardiac or neurological testing (see table). The only testing modality that provided significant results potentially related to the etiology of syncope was the exercise test, with 24% (n=41) of those tested having hypotension and loss of postural tone while standing after exercise, consistent with a diagnosis of neutrally-mediated hypotension. In addition, many of the tests uncovered minor abnormalities not related to syncope. While some testing was performed during their Syncope Clinic visit, 46% of the additional testing occurred outside of clinic recommendations. A total of $1.1 million was charged to the patients in this study for the cardiac and neurological testing performed, with an average testing charge of $2,488 per patient.

Type of Test	Testing performed n (%)	Minor abnormality noted, unlikely related to syncope (n)	Abnormality noted, potentially related to syncope (n)
ECG	437 (99)	17	9
Echocardiogram	79 (18)	7	1
Exercise Test	171 (39)	0	41
Head CT	18 (4)	2	0
Head MRI	48 (11)	9	0
EEG	51 (12)	4	0

Conclusion

Pediatric patients with syncope, while typically benign in etiology, often have expensive neurologic or cardiac testing with little related clinical information gained. Efforts to reduce this unnecessary testing can have significant impact on healthcare costs in this population.