

Methods

Immediately thereafter, the same observers answered if the diagnostic confidence changed with the additional demographic information. The results from the observes were statistically analyzed for validity of the home video (sensitivity, specificity). The results from both observers were statistically analyzed for the Kappa statistic.

Results

Both observers reviewed 10 home video capturing habitual paroxysmal events of 10 patients. Based on Video-EEG evaluation, 4 of 10 events were epileptic and 6 of 10 events were psychogenic. On the events captured on home video, 3 of 4 epileptic events were convulsive episode and 1 was non-convulsive episode. Three of 6 events captured on home video of psychogenic events were convulsive episode and 3 were non-convulsive.

Observer 1: Observer 1 correctly identified 3 of 4 definite epileptic paroxysmal events and all 6 psychogenic paroxysmal events, based on a review of home video. The sensitivity and specificity of the home video in identifying epileptic event of observer 1 were 75% (3/4) and 100% (6/6) respectively.

Observer 2: Observer 2 correctly identified 3 of 4 definite epileptic paroxysmal events and 5 of 6 psychogenic paroxysmal events, based on a review of home video. The sensitivity and specificity of the home video in identifying epileptic event of observer 2 were 75% (3/4) and 83.33% (5/6) respectively.

The inter-observer reliability or a kappa statistic was 0.78 implying excellent inter-observer reliability.

There was one non-convulsive epileptic event on home video in which both observers formulated an incorrect impression as a psychogenic paroxysmal event. Both observers agreed that the semiology was difficult for this event. The difficulty of semiology was the main reason which made the formulation of the impression based on home video difficult for both observers.

With addition of demographic information, confidence was higher for one video but unchanged in 9 or 10 videos for both observers.

Table 1. Validity and Inter-observer Reliability of Home Video Recording of Paroxysmal Event in Diagnosing Epileptic Paroxysmal Event

	Sensitivity (%)	Specificity (%)
Observer 1	75 (3/4)	100 (6/6)
Observer 2	75 (3/4)	83.33 (5/6)
Inter-observer Reliability (Kappa)	0.78	



Observer 1		Video-EEG Monitoring		Total
		EE	PE	
Home Video	Epileptic Event (EE)	3	0	3
	Psychogenic Event (PE)	1	6	7
Total		4	6	10

Observer 2		Video-EEG Monitoring		Total
		EE	PE	
Home Video	Epileptic Event (EE)	3	1	4
	Psychogenic Event (PE)	1	5	6
Total		4	6	10

Table 2 and 3. 2x2 Table Showing Results from Both Home Video and Video-EEG Monitoring from Two Observers

Discussion

Based on the preliminary result of our study, the home video alone had high specificity and fairly high sensitivity in distinguishing the epileptic and psychogenic paroxysmal episode. There was also a high reliability between observers. However, there were some limitations of this study.

1. The sample size in this preliminary result was small, which made it prone to sampling variation and the study population might not represent the whole range of patients seen in a seizure clinic.
2. One problem of recording home video of the paroxysmal event was that it usually missed the initial period of the paroxysmal event.
3. It was difficult to distinguish some seizure types based on only video, especially hypermotor seizure, as we saw in this study that both observers formulated an incorrect impression on one non-convulsive epileptic paroxysmal event.

In spite of these limitations, the home video recording of the event gives very additional helpful information to the history, especially in convulsive epileptic paroxysmal events and psychogenic paroxysmal events. Almost all episodes could be characterized by merely reviewing the home video event recording without additional information.

Conclusions

A picture is worth a thousand words. Based on our preliminary result, reviewing home video recordings of the paroxysmal event alone gives invaluable information in characterizing of the nature of the event, especially in convulsive epileptic episodes and psychogenic episodes. Furthermore, nowadays, video recording feature is embedded in almost all smartphones, a smartphone home video recording of the paroxysmal event is not cumbersome or costly; therefore, it is advisable for physicians to ask the family members to record a home video of patients. However, the real utility of home video and whether they would supplant the need for inpatient Video-EEG monitoring in characterization of the paroxysmal episodes requires a larger study especially including more patients with non-convulsive epileptic episode.