

# The tendency to have psychogenic non-epileptic attacks out of camera view during long-term video-EEG monitoring

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The aim of this study was to compare out of camera view seizure occurrence rates between psychogenic non-epileptic and epileptic seizures during long-term video-EEG monitoring. From 1996 to 2001, 208 adult patients were monitored in 212 sessions, and 196 patients were included in the study. Depending on video-EEG recordings and witnessed accounts, 18 of the patients had no seizures recorded, 160 had epileptic seizures and 18 had psychogenic non-epileptic seizures, four of whom had psychogenic non-epileptic seizures plus true epileptic seizures. Six hundred and ninety two seizures were recorded; 634 of them were epileptic seizures and 58 of them, psychogenic non-epileptic ones. Out of camera attack occurrence was significantly higher in patients with psychogenic non-epileptic attacks compared with epileptic ones (chi-square with Yates correction = 19.75,  $df = 1$ ,  $P < 0.001$ ).

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*Key words:* psychogenic non-epileptic seizure; video-EEG monitoring; out of camera.

## INTRODUCTION

Psychogenic non-epileptic seizures also termed psychogenic, or pseudoepileptic seizures account for 20–30% of all intractable seizures<sup>1–4</sup> and occur in 10–20% of the patients referred to epilepsy centres<sup>1</sup>. The prevalence of psychogenic non-epileptic seizures is somewhere between 1/50 000 and 1/3000<sup>1</sup>.

Ictal behaviour characteristics observed from video recordings are very helpful (with time synchronous EEG recordings) in the differential diagnosis. Sometimes attacks cannot be recorded by video because attacks may occur out of sight of the camera (in the toilet, etc.). We noticed that patients with psychogenic attacks tend to have seizures out of camera view and in this study we tried to clarify this phenomenon.

## MATERIALS AND METHODS

In the Department of Neurology in Hacettepe University Hospitals, we monitored 208 adult patients aged above 15, in 212 sessions between 16 September 1996 and 18 April 2001 (four of the patients were

monitored twice for re-evaluation). Using the standard international 10–20 system of electrode placement, each patient underwent scalp video-EEG monitoring which has included 32 channels for EEG (Telefactor Beehive-32 CTE).

Our department has one room for video-EEG monitoring and the camera in the room is set up to record the patient's bed, but the corridor to the toilet and the inside of the toilet are out of sight of the camera. The camera can be turned by the nurse manually towards the corridor if necessary.

Psychogenic non-epileptic seizures are defined as lack of EEG changes during a clinical event associated with apparent alteration in consciousness or bilateral motor phenomena, presence of alpha rhythm during alteration of consciousness, nonstereotypic nature of the events and normal EEG in different physiological states during continuous recording<sup>5</sup>. Patients with purely subjective phenomena were excluded from the study since ictal epileptiform activity may not always be apparent during simple partial seizures.

Twelve patients were excluded from statistical analyses; of them six had progressive myoclonic epilepsy, one had reflex epilepsy whose seizure was

inducted by the physician, and the other five were excluded for different reasons.

Every seizure of all the patients was reviewed by one of the authors (M.A.) who noted whether the seizure occurred out of camera view or not. The out of camera attack rates of psychogenic non-epileptic seizures and true epileptic ones were compared with chi-square with Yates correction. The level of statistical significance was set at  $P < 0.05$ .

## RESULTS

Of the 196 patients included in the study, 98 were women (50.0%) with a mean age 27.8 (SD 8.50; range 15 to 53). The patients were monitored for 1 to 23 days, with a mean of 5.13 days. Depending on video-EEG recordings and witnessed accounts, 18 of the patients had no seizures recorded, 160 had epileptic seizures and 18 had psychogenic non-epileptic seizures, of whom four had psychogenic non-epileptic seizures plus true epileptic seizures. Twelve (66.6%) of the psychogenic non-epileptic patients were women. The total number of seizures recorded was 692; 634 were epileptic seizures and 58 were psychogenic non-epileptic ones. In four epileptic patients, four (4/634) out of camera view epileptic attack recordings were taken while out of camera view psychogenic non-epileptic attack recordings were six (6/58) in four psychogenic non-epileptic patients. In two patients (2/4), psychogenic non-epileptic seizures had also been recorded in front of the camera. The out of camera attack occurrence difference was found to be statistically significant (chi-square with Yates correction = 19.75,  $df = 1$ ,  $P < 0.001$ ).

## DISCUSSION

From review of the literature, psychogenic non-epileptic seizures account for 20–30% of all intractable seizures and as in our study, they have a two or threefold higher incidence in women<sup>2–4</sup>. According to our data, we believe that psychogenic non-epileptic

seizures tend to occur more frequently out of camera view than the epileptic ones. As psychogenic non-epileptic seizures pose diagnostic problems, any new significantly statistical data will be a clue to the correct diagnosis. To our knowledge, there has been no other report about this interesting finding.

Frontal lobe partial seizures are sometimes mistaken for psychogenic non-epileptic seizures. Younger age at seizure onset, MRI abnormality, short ictal duration, seizures with prone posture, and nocturnal occurrence are features helpful in differentiating frontal lobe partial seizures from psychogenic non-epileptic ones<sup>6</sup>.

In our study, all patients with psychogenic non-epileptic seizures had an underlying psychiatric diagnosis of conversion disorder or depression. But we could not distinguish between conscious malingering or unconscious conversion reaction. In patients with conversion disorder, relative unawareness of simulation is the only factor that distinguishes the patient from the malingerer and this distinction is usually the most difficult to make. In practice such distinctions can infrequently be made and the first and most necessary diagnosis is the distinction between real and simulated seizures<sup>7</sup>.

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