

## Phenomenology and diagnoses associated with psychogenic non-epileptic seizures

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### ABSTRACT

**Introduction:** Psychogenic non-epileptic seizures (PNES) are seizure resembling behavior without electrical correlates inside the brain, often having a psychogenic etiology. However, there is a paucity of research into the phenomenology, and hence, there is frequent diagnostic dilemma. The phenomenology appears to be spread across multiple diagnostic categories in non-specific manner. The study aimed at finding the phenomenology and the other diagnoses associated with PNES. **Materials and Methods:** 50 consecutive patients presenting to the tertiary psychiatric center of Eastern India were enquired on semi-structured proforma to assess the phenomenology (including the antecedent events or stressors, ictal details, and the post-ictal stage) and associated diagnosis. Appropriate diagnostic tools were used to verify the associated diagnoses. **Results:** The patients of this sample mostly belonged mostly to low socioeconomic group, females from second decade who were unemployed and had poor socioeconomic support. They mostly had ongoing stressors, were mute during spells showed non-stereotyped movements of body parts. Most of them also had other Axis I and Axis II diagnosis of which depression, anxiety, and personality disorder were common. **Conclusion:** PNES is a non-specific expression of various underlying psychopathologies, because it is seen most often with other independently diagnosable psychiatric conditions.

**Key words:** *Associated diagnoses, Phenomenology, Psychogenic non epileptic seizures*

Psychogenic non-epileptic seizures (PNES) are seizure resembling behavior without electrical correlates inside the brain, often having a psychogenic etiology. It has been defined as “abrupt paroxysmal change in behavior or consciousness that resembles an epileptic seizure but that is not accompanied by the electrophysiological changes that accompany an electrical seizure or clinical evidence for epilepsy, for which no other evidence is found for other somatic causes for seizures, whereas there is positive evidence or there is strong suspicion for psychogenic factors that may have caused the seizures [1].”

They are yet common observation in developing society, appear quite dramatic, and attract undue attention not only from family members but also public at large. Heterogeneity of the phenomenon along with its complexity and resemblance to true seizures leads to frequent misdiagnosis. The prevalence has been estimated to be 2 to 33% in developed society [2]. However, the same might be higher in developing world in the opinion of the authors. Complicating the facts is the observation that 5-40% of the patients also suffer from concomitant true seizures [3,4]. Mean latency to diagnosis remains 7.2 years [5]. Professionals often tend to err on the side of caution and three quarters are still treated with anticonvulsants [6]. In 25-30% of the patients referred to the tertiary epilepsy centers receive diagnosis of PNES [7,8]. The failure to recognize the phenomenon may incur significant iatrogenic harm [9,10] and cost [11]. There are

significant histories of self-poisoning, self-injury and previous episodes of unexplained physical symptoms [12,13]. Many come from dysfunctional families and histories of physical and sexual abuse are not uncommon [14-16].

Keeping the above considerations in mind and the fact that the cultural variations and difference of decades might have led to differences in the types of ongoing stressors and consequent manifestation, the phenomenological aspects of PNES was planned to be studied in one of the major medical centers of eastern India. The study was designed to observe the phenomenology of PNES along with the psychiatric context in which it occurs. It consisted of comprehensive assessments of the pre-ictal, ictal and the post-ictal events, stressors and co-morbid psychopathology.

### MATERIALS AND METHODS

The study which was cross-sectional in nature was conducted at the Department of Psychiatry, Patna Medical College & Hospital, Patna after taking clearance from Departmental Ethics Committee. 50 consenting consecutive cases of PNES attending the psychiatric outpatient department (OPD) between March and August 2006 who met the inclusion and exclusion criteria formed the sample of this study. Patients diagnosed with PNES from both sexes between age group 18 and 60 years irrespective of the treatment received were included in the study. Patients

with a history of substance abuse, drug intoxication or poisoning, mental retardation, and those who were unwilling to give consent to participate in the study were excluded from the study. The tools used were ICD-10; a semi-structured sociodemographic pro forma and a semi-structured seizure data sheet. The information was obtained from both the patient and a reliable informant.

### **Observation**

The sociodemographical and phenomenological observations are being described under different headings.

### ***Sociodemographic details***

The total sample size of the study consisted of 50 consecutive patients attending the OPD of Department of Psychiatry, Patna Medical College, Patna, the mean age of the sample was found to be 27 years and apparently majority (36%) of the patients were from smallest age distribution range, i.e., 18-20 years. The next commonest age group was 21-30, consisting of 16 patients and least no. of patients belonged to 41-50 years age group. Females formed the majority (82%). Only three patients were employed in government services. Hindus formed the major religion group in the sample (98%) who are the majority population in the catchment area of the study. Nine were illiterate, 15 received <10 years of formal education, 15 received 10 years of education. Only seven were graduates. 31 patients were from rural background. Five were youngest in birth order, 31 were middle and 14 were eldest among the siblings. 35 patients were from nuclear family, and rests were from joint families.

### ***Clinical history and antecedent features***

History of head injury, significant according to the patients themselves was recorded. 40% reported having sustained such injury, and 56% denied it. Since two patients were mute at time of interview, the history about head injury could not be elicited. In 30% of them, there was a history of previous unexplained physical illness. They underwent detailed cardiac, orthopedic, and other relevant investigations before attending the psychiatry OPD. 30% of the patients had major medical illness. The illness included in this category were tuberculosis (treated or untreated), hypertension, blood pressure, etc., one of the patient was treated for Kala-Azar in the past. Few of them had preoccupation with illness at the time of presentation. 29 patients agreed having witnessed seizures (either PNES or true seizures) at some point of time in the past. Most commonly they witnessed seizures among family members and in other instances in neighbors and relatives. Premorbid social adjustment was found to be unsatisfactory according to the relatives in 38% of the patients. It included peer relationship problems, conflicts with family members and lack of close associations. 15% of the subjects admitted having experienced past traumatic experiences either repeatedly or solitarily in their lives which were significant to them. This included childhood traumatic events, e.g., childhood physical, mental or sexual abuse, harsh parenting, etc. Nearly all the

patients (96%) admitted having experienced some major stressor in recent past or experiencing it even at the time of presentation at the OPD. Caring, honest and empathetic relationship with the patients was needed in all the cases to be able to reach the depth of the psyche of patients. Non-judgmental approach was employed to get insight into the stressors patients experienced. Understanding stressor was apparently important not only for purposes of completion of history but also for deciding the line of treatment. It included a wide variety of stressors. Total duration of the illness at the time of presentation in the OPD varied from 2 days to 5.5 years. The severity of the illness was found decreasing in majority, i.e., 46% of the patients at time of presentation. 14 of them reported the course of illness to be static and it was found to be increasing in severity in 26% of the cases. Here, the data of the period was elicited when the patient was at peak of his/her illness. Maximum number of the patients had single episode per day. The next frequent category was of the patients who experienced it 2-5 times per day.

### ***Ictal details***

There was a variety of pre-ictal changes experienced by the patients. They most common ones included darkness in front of eyes, restlessness, anxiety, giddiness, tingling, dizziness, fear, etc. So clubbing them together as pre-ictal events will be better while describing phenomenology of NES than pre-ictal aura. It was found to be present in 84% of the patients before onset of spell proper which is significant. In 70% of the subjects episodes of PNES occurred in the presence of other persons. It occurred in both presence and absence of other persons in 30% patients. While in none of the patients, it occurred in the absence of other persons only. The phenomena occurred inside home only in 32% of the cases and both inside and outside house is most 60% of the patients. It occurred only outside house in 8% of the patients.

It was found to be of sudden onset (within 2-5 min) in 84% whereas it was of gradual onset in 16% patients. Majority, i.e., 36% patients had single episode per day at peak of their illness. 15 cases experienced it more than 50 times per day. Regarding average duration of the spells, the spells lasted 1-5 min in 64% of the subjects included in the sample of the study. It lasted more than 10 min in only 18% of the cases. The frequency of spells during the one month period preceding the presentation ranged from zero to two fifty. The duration of seizure-free interval in individual patients ranged from 2 min-2 years. The pattern of PNES episodes was variable in each episode in 72%, whereas it remained the same in rest. Attendants of 32% of the patients reported that the patients were able to speak during the spells and in few of the cases made indications along with speech to express their intent. Verbal output was absent in rest of the 68% of the cases, so the majority of the patients kept mute during the episode. The motor activities during different episodes varied in 29 cases. Among the patients those who were able to speak it was found to be comprehensible in 26% and was incomprehensible in 10%. In the cases where, it was incomprehensible, the most common phenomena was murmuring, moaning, humming, etc. Communication (either

verbal or non-verbal) with the patients were possible in 83% of the cases. The eye lids remained closed during the spells in 78% of the cases and remained open in 22%. Paradoxically laughter was present in 12% of the cases during the spells while crying or tearfulness was present in 36% of the patients. Frothing from mouth was observed in 14% of the NES patients. Loss of bladder continence was seen in 12% and loss of bowel continence was observed in only 4% of the patients. 64% of the subjects who lost awareness of the surroundings and whose responses were not comprehensible were defined to have impaired consciousness in this study. Oro-lingual injury was present in 4% of the cases whereas bodily injury or hurt was present in 12%. A possible sign of extreme agitation or suppressed desires and anger toward some of the persons present at the site of fits-attempt to run away from the site of and/or aggression during the episodes was found to be present in 20%. 29 patients who had awareness of surroundings during the episodes reported fear, anxiety, anger, visual, auditory, gustatory, tactile, or other disturbances during the spells.

The Table 1 depicts that the movements were mostly non stereotyped, nonrhythmic and remained variable. 31 of them were observed to have clenched teeth during spells. The attendants came out with different interesting methods of terminating it. Some of them included sprinkling of water, pinching both nostrils, pinching nostrils along with covering the mouth simultaneously, putting spoon in-between the upper and lower teeth lines and at other times some painful stimuli terminated the episodes. Four patients had PNES episodes inside examination room without induction or suggestion. In all four cases, heart rate, respiratory rate, pupillary reflexes and planter reflexes were within physiological limits. In two of them ictal blood pressure was recorded which was normal. In rest of two blood pressure could not be recorded, since the spell did not last long enough to complete the arrangements needed to record it. Verbal suggestion by the attendants (and in one case by the observer himself) terminated the spells in 18% of the cases. Recovery occurred within few minutes in majority 86% of the cases and was gradual (spanning over several minutes to hours) in rest.

**Table 1: Pattern of motor acts during the spells**

Motor activities	Present	Absent
Side to side head movement	19	32
Forward pelvic thrust	4	46
Out of phase clonic movt. of either or both limbs	14	36
Thrashing	40	10
Rhythmic	48	2
Stereotyped	0	50
Variable pattern	34	16
UL movements	16	34
LL movements	16	34
Neck movements	21	29
Synchronicity	2	48
Complex motor movement (automatism)	2	48

UL: Upper limb, LL: Lower limb

### Postictal events

All the patients were found to be oriented in person, place and time within minutes of termination of spells, and there was no post spell/ictal confusion in anyone. None of the patient showed signs suggestive of complete paralysis (Grade - 0) in the patients after recovery from the spells as per the history by the informants, but paresis and weakness of limbs and/or trunk was observed in 22% of the patients. Reporting or recall of the spell by the patients postictally during the interview was nearly clear and consistent in 34% of the cases, and there was either no recall or ambiguous details given by patients in 66% of the cases.

### Investigations

Seven patients who underwent electroencephalography (EEG) evaluation, 10% had EEG within normal limits. Video EEG (vEEG) was not done in either of them. 11 patients underwent computed tomography (CT) brain evaluation mostly advised by physicians or psychiatrists. None of the scans showed any abnormality.

### Other relevant histories and diagnosis

Of the 41 females, who were included in the study sample, only two reported increase in frequency or intensity of symptoms around menstruation. It was also found that 38% of them had deep rooted, social beliefs with no scientific rationale. Another observation was 11 out of 50 patients had already received treatment from some psychiatrist or neurologist with psychotropics.

### Other associated psychiatric symptoms and disorders

Along with the PNES which falls in the diagnostic criteria of dissociative disorder in ICD-10 and conversion disorder in DSM-IV, there were other psychiatric symptoms and diagnosis in

**Table 2: Other associated psychiatric symptoms and disorder**

Other diagnosis	Number of patients
Depression	20
Anxiety depression	4
GAD	3
Borderline personality disorder	3
Personality disorder unspecified	3
Acute stress disorder	2
Somatoform disorder	2
Acute and transient psychotic disorders	2
Schizophrenia	2
Schizoid personality disorder	1
Bipolar affective disorder	1
Persistent mood disorder unspecified	1
Borderline intelligence	1
Dyssomnia	1
Factitious disorder	1
Total	47

GAD: Generalized anxiety disorder

a significant number of the patients. Such associated diagnosis was present in 80% of the cases. Table 2 shows the other psychiatric illnesses associated. It is notable that few patients had more than one such associated diagnosis. True seizure was found to be present in one case out of the 50 cases investigated during the study.

## DISCUSSION

The study attempted to systematically describe the phenomenological details of NES. The topic probably was not studied in this detail in this region in recent past.

Regarding the demographical findings of the study, 49 of the patients were accompanied by some informant/relative of whom 47 attendants witnessed the spells themselves. This probably reflects the care the patients enjoy in Indian culture. The mean age of the patients was found to be 27 years, which is similar to earlier findings [17] where PNES tends to begin in young adulthood. The fairer sex suffered the illness more frequently, which is also similar to earlier findings [18-20]. Very few of them (6%) were employed, and their total family income was relatively low and most were from rural background which is depictive of the socioeconomic constraints. Poorer educational attainment was common among them.

Minor head injuries [21,22] and learning disabilities [23] have been linked to PNES, but this study went into a finer detail of the subject were head injury significant to the patient themselves was taken into account. It was found to be present in significant 20 (40%) of patients. This is postulated to be a stressor to such patients, as many of them came out with the information spontaneously during the interview. Somatoform disorder and history of unexplained illness [24,25] are common associated diagnosis in PNES. This was found to be consistent with this study where 30% of the patients had such histories, and 22% of our patients received psychiatric treatment which is lesser than that in western literature [14,26]. Major neurological illness was infrequent (4%) in the sample. The patients in the majority (58%) had witnessed seizures (either PNES or true seizures) spells earlier. This was an interesting observation as it might point toward modeling.

Premorbid social adjustment and coping are expected to be poor in patients with PNES. These patients prefer to use denial and repression to perceived threats rather than to confront and solve problems [27]. Premorbid social adjustment was poorer as per report of the informants (not measured on any scale) in this study too. Role of past traumatic experiences and stressors has been explored repeatedly by different workers [15,16,28,29]. This study goes with the findings of past.

### Ictal and Postictal Phenomenon

The observation regarding number of episodes per day was considered to reflect the intensity of the illness. The observation of pre-ictal psychic changes constituting of anxiety, nervousness, fear, darkness in front of eyes, giddiness, etc., is a finding relatively unexplored by other workers.

Instead of objective consciousness [18,30] the subjective awareness of the patient to the surroundings was explored and

was found to be fairly common. The eyes remained closed during the episode most commonly as suggested by others [31] the phenomenon occurred commonly in the presence of others and some of the patients in presence as well as in the absence of others but significantly in none of them it occurred in the absence of others only. The finding was reinforced by the fact that it occurred outside house in mere 8% cases though it rarely (8%) occurred in the presence of doctors which is contrary to earlier finding [12]. The onset of spells was found to occur within minutes of prodromal symptoms in 84% cases which do not go with the findings in most other studies [32,33] who found it to be occurring in gradual onset fashion commonly.

There have been very few published studies in recent times in the world and probably none in region putting light on ictal responsiveness. Variability of fit pattern observed commonly went along with findings from other studies [12]. The responses were very rarely rhythmic/automatic. In the study, only one of the patients showed signs suggestive of opisthotonos which is an occasional finding in other studies [30,34]. The findings importantly emphasize that relative lack of movements (limbs, neck, and trunk) was rather commoner observation than observed earlier [6,18,31,36].

Foyaca-Sibat and de F Ibanez-Valdes found cursing to be present in 54% of the cases they studied. The phenomenon of cursing was not observed in our study population. 18 patients cried during either of the spells and 6 were reported to have laughed occasionally. Aggression and attempts to run away from the site though uncommon were newer findings.

A less studied phenomenon frothing of saliva was an uncommon presentation and many of them tried spitting as described by the relatives, instead of the passive drooling which is observed in true epileptics. Loss of bladder continence was uncommon (12%) whereas bowel incontinence was rare. Injuries are common observation in true seizures, and they are especially common among patients of Grand Mal seizures. But as has been found in many studies [36] injuries (either oral/bodily) was infrequent. Teeth's clenching in ictal phase has been mentioned as an occasional phenomenon [36], but the study population showed it to be present commonly. This is suggested to be an outcome of the common knowledge in the culture where seizures are commonly equated to movements along clenching of teeth.

Regarding time span of PNES and its recovery with a study sample of 32 rural patients from the Foyaca-Sibat et al. found that psychogenic seizures were of considerably longer duration than true seizures. They found that maximal duration of tonic-clonic epileptic seizures was 95 s and for psychogenic seizures it was 904 s. Minimal duration was 45 s for epileptic seizures, and 18 s for psychogenic seizures. In the current study, notably some of the methods employed by the relatives for terminating the episode included sprinkling of water, pinching both nostrils, pinching nostrils along with covering the mouth simultaneously, putting spoon in-between the upper and lower teeth lines and at other times some painful stimuli terminated the episodes. In the study, the spells were relatively short-lived in most of the

cases. Most of the patients experienced spells lasting  $\leq 5$  min. The next commonest interval was 6-10 min. Infrequently, only did it stay longer than 10 min. Rapid postictal orientation has been reaffirmed by others [37]. When the spells occurred inside examination room, heart rate, respiratory rate, plantar reflex, pupillary reflex, and babinsky reflex was found to be within physiological limits in accordance with others [35,38]. Verbal encouragement and supportive suggestions as suggested by many of the workers [12,39] were able to terminate the episodes in a quarter of the patients. Orientation was clear in all whereas residual weakness or paresis was present in 22% of the patients in the immediate postictal period. Recall of the event was present in 34% of the patients which is a significant finding.

### Relation to Menstruation and Culture

Woods and Mitchell reported various aspects of depression and other dysphoric disorders in perimenstrual period but it does not seem to alter the frequency of PNES. It was postulated that deep-rooted culture-bound beliefs will have an implication in the causation of the illness. It was found that 38% of the patients had such beliefs. The socio-cultural background of the sample population may be the confounding variable. Past psychiatric illnesses were found to be common [14,26] among patients with PNES. This study found that 22% of the patients had previous psychiatric consultations. Lack of awareness and treatment facilities may be a confounding factor.

### Other Associated Psychiatric Symptoms and Diagnosis

The majority (80%) of the patients were found to be suffering also from some other psychiatric disorders or symptoms of pathological severity in addition to NES. Psychiatric comorbidity can be cause or the result of PNES [40]. Depression being the most common [19] and others being anxiety spectrum illnesses [41,42]. Alper [7] reported dependent traits to be more common but others report cluster B personality disorder [43-45] to be common. Findings from the current study reported similar results where depression was the most common association, the other were anxiety spectrum disorders, personality disorders mostly from cluster B and rarely psychotic illnesses.

Associated true seizures were found to be present in one case out of the 50 cases investigated in the study. Hence, co-existing true seizures and non-epileptic seizures was found to be present in only 2% of the cases in the study contrary to findings from other studies [3,4,46] that estimate it to be as high as 5-40%. Association of the majority of the cases of PNES with a wide range of co-morbid psychiatric diseases raises many theoretical and nosologic issues which need to be addressed.

### Investigations

Patients with PNES have been reported to have higher than average rates of abnormal results on MRI and EEG suggesting that physical brain disease may play a role in the development of

the events. However, this study revealed CT brain to be normal in all 11 patients investigated and EEG was done in 7 patients and was found to be abnormal in meager two which may have been influenced by sampling.

### CONCLUSION

This study attempted to find out the phenomenological aspects of PNES. The patients of this sample belonged mostly to low socioeconomic group, females from second decade who were unemployed and had poor socioeconomic support. They mostly had an ongoing stressors, were mute during spells showed non-stereotyped movements of body parts. Most of them also had other Axis I and Axis II diagnosis of which depression, anxiety and personality disorders were common. This is suggestive of PNES being a non-specific manifestation of underlying psychological disorders just as anxiety and depression being seen across many diagnostic categories. Interestingly this is similar to epileptic seizures being non-specific manifestation of different underlying neuro-pathologies. Even though the phenomenology was studied in considerable detail it remains to be further studied in through larger multicentric studies.

### LIMITATIONS OF THIS STUDY

Relatively smaller sample along cross-sectional design where the psychopathology was not studied in great detail and informant bias could not be ruled out.

### FUTURE DIRECTIONS

A prospective study design with a longer duration of follow-up, with multiple assessments aiming at finding detailed psychopathology, treatment and determinants of outcome also inducing investigating modalities, e.g., vEEG and fMRI and is suggested.

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