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Case Series: Functional Neurological Disorder (FND), Case Reports of 4 Patients

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ABSTRACT

Functional neurological disorder (FND) occasionally known as dissociative seizure or pseudo-genic non epileptic seizure. It resembles epileptic seizures in symptoms and signs as it is accompanied by transient focal/global neurologic symptoms and signs seen in seizures but lack electrophysiological correlates. The episodes of altered movement, sensation and behavior that resemble epileptic seizures. Functional neurological disorder (FND) seizures episodes involves altered movement, sensation, or behaviour that resemble epileptic seizures which are not caused by abnormal epileptic form electrical activity in the brain but rather often due to intentional deception as in factitious disorder or malingering. In some people with developmental or intellectual disabilities, non-epileptic events are behavioural or attention-seeking. However, PNES is distinctly different in that it is not conscious or intentional. We present case reports of 4 patients: A 24-year-old female medical student who presented with recurrent seizure-like episodes, initially misdiagnosed as epilepsy and was treated in peripheral hospitals until she was presented to a neurologist. Through comprehensive evaluation, including video-electroencephalogram (vEEG), the diagnosis of FND was confirmed. These cases highlights the need for a multidisciplinary approach to diagnosis and management, highlighting impact of psychological intervention in the treatment of FND.

Keywords

Functional, Neurological, Disorder.

Introduction

Functional neurological disorder (FND) occasionally known as pseudo-seizure is a type of functional neurological disorder which mimics epileptic seizures, as it is accompanied by transient focal neurologic symptoms and signs but are not caused by abnormal epileptiform discharges. PNES was formerly referred to as conversion disorder, but presently DSMV-TR designated it as a Functional Neurological Disorder (FND) [1]. Kanemoto, LaFrance, Duncan, Gigineishvili, Park, Tadokoro, et al. [2] observed that the recent estimates place the prevalence of PNES at 50/100,000. The underlying pathophysiology of psychogenic non-epileptic

seizures PNES remains ambiguous as it is far more complex than a simple non-structural epilepsy mimic or a straightforward somatic expression of an internal distress. Psychogenic seizures (PNES) have a devastating effect on quality of human life this might involve psychological, fiscal, social and physical consequences as well as inability to work, drive or carry out daily tasks American Psychiatric Association [3]. Brown & Reuber [4] reported that an integrative cognitive model was developed to explain its causal processes. Another biopsychosocial-based model emphasizes the place of predisposing factors such as female gender, previous sexual abuse or neglect in childhood, and comorbid psychiatric conditions [5]. Jungilligens, Paredes-Echeverri, Popkirov, Barrett & Perez [6] recently, reported the emergence of an innovative approach based on predictive brain processing for the understanding of FND. In most cases, functional neurological disorder (FND) is often misconstrued and misdiagnosed as epilepsy emergency and hospital physicians, leading to inappropriate management and substantial morbidity. Prompt and precise diagnosis is vital for proper management. This case report underlines the diagnostic challenges and proper therapeutic approaches for FND.

Case 1

The first case was a 24-yearsold female medical student who was referred to the psychology unit of ESUT Teaching Hospital by a neurologist with complaints of recurrent episodes of "seizure-like" activity one hour before presentation to hospital. Each of the episodes was marked with generalized stiffening and jerking of muscles of the head, hands and legs, lasting 2 to 5 minutes and terminated spontaneously followed by postictal sleep of less than 10 minutes. Within the first hour on admission, she had 6 episodes of myoclonic jerks involving all limbs. At admission each episode that occurred was terminated with intravenous (IV) diazepam, titrated against the convulsion. She complained of intense excruciating pain, headache, dizziness, pains in her virgina and feeling of sadness but there was no photophobia, neck stiffness, fever, skin rash, nor previous head trauma, and in between the events consciousness was preserved and there was no tongue biting, no incontinence.

These episodes have been reoccurring predominantly during stressful situations, such as academic deadlines or interpersonal conflicts and loss. The first time she experienced it was when her relationship ended abruptly with her boyfriend, and worsened with the sudden death of her elder sister a lawyer by profession, who died after complaining of headache on her returning home from her office. The triggering factor now is worry about her forthcoming 4th MBBS examination. This is the first episode of her psychiatric history, there is no history of trauma to the head. There is no history of prolonged hospital admission, no history of surgery or blood transfusion in the past.

She is the 2nd child in the family of 4 children in a monogamous setting. Two males and two females three are alive and well adjusted and one female dead and cause of death unknown. There is no family history of hypertension, diabetes mellitus epilepsy, asthma, or mental illness. Her relationship with family members is cordial.

Pregnancy labour, delivery not gotten from the patient. Childhood history she was told she grew up with her mates and has no problem.

The patient reported sudden death of her sister, high levels of academic stress and a recent breakup. She denied any history of physical or sexual abuse, but reported feeling excruciating pain all over her body especially in her vagina and feeling sick. She inquired from her boyfriend if he had been cheating on her with somebody, as she suspected that she had been infected with an STD, but the boyfriend denied.

She started primary school at age of 8 and at age 15 began secondary the time finished at age 21 and presently she is a 400 level of medical student. She had good relationship with her classmates, was of above average in performance academically as she claim to have maintained between 1st -3rd positions all through her academic career.

Her menarch was at about 14yrs, K -5/28, no history of STD, she has knowledge of contraceptives and have not used them. She has heterosexual orientation and coitarche was at the age of 19yrs.

She denied having brushes with the law enforcement agency and use of alcohol or any psycho-active substance of abuse.

She described herself as trustful and easy going person who has few friends and keep them. She likes singing at her leisure, she goes to church regularly and of high moral standard.

Normal neurological examination.

No focal deficits or signs of systemic illness.

Diagnostic Investigations

1. Routine EEG: Normal interictal findings.
2. Video-EEG (vEEG): Captured a typical episode, showing no epileptiform activity during the event.
3. MRI Brain: Normal.
4. Psychological Assessment: MMPI-2, SCL-90, her results reveals that her scores anxiety as well as depression scales were elevated and personality wise she was a dependent personality type.

Diagnosis

Psychogenic non-epileptic seizures (PNES) or Functional Neurological Disorder (FND) likely related to underlying psychological stressors.

Management

Multidisciplinary Approach:

Neurology: Discontinuation of AEDs, as they are ineffective for PNES.

Psychology: Cognitive-behavioral therapy (CBT) was initiated to address underlying anxiety and depression.

Psycho-education was initiated to educate both the patient and the family members of the nature, signs and symptoms of disorder and to reassured them that the episodes were not due to epilepsy.

Stress management techniques deep breathing and progressive muscles relaxation was initiated to help the patient manage her stress and anxiety

Follow-Up

Regular follow-up with psychologists and neurology to monitor progress.

Gradual reduction in seizure frequency over 3 months with CBT and stress management.

Case 2

Presenting Complaint

Recurrent seizure-like activity for about 7 months

A 13-year-old female JSS3 student who resides with the parents was brought by the mother to the accident and emergency department of Enugu State University Teaching Hospital Parklane Enugu-Nigeria account of recurrent episode of unresponsiveness, rhythmic limb movements and eye rolling which usually last 2-3 minutes and followed by fatigue. There was no history of tongue biting, no history of urinary incontinence or postictal confusion. The episode occurred 3-5 times per week and were not associated with fever, trauma or metabolic disturbances. The first episode happened the day the father and mother were quarreling and father threatened that he will kill the mother forcefully dragged into the room and in the process a glass cup on the table fall down, on hearing the sound she thought that it was gun shot, later that evening it was reported that patient was seen before 10pm lying lifeless in her room and was rushed to the hospital on reaching the hospital she woke up and insisted that she must be taken home and they did, in the morning she was treated malaria: atimetal, amoxil and paracetamol. The second episode happened the night the mother along with her and other of her siblings were ejected out of their house by their father. At that first episode, she rushed to the peripheral hospital where she was diagnosed with epilepsy by a general physician and was started on antiepileptic without no significant relief of the symptoms, the episodes continued 3-5 times a week.

Until recently, she again complain of weakness and suddenly she laid down very weak, tried to stand after some time and was advised to rest more in the process she jerked for around 3 times and the both hands fingers clocked half-way. Following this the mother massaged her hand and feet with rub.

Following last episode the patient was taken see a neurologist who place her suvistery-500 twice daily and a week and 5 days she was on this drug the last episode happen hence the referral.

It was reported that before onset of illness patient was irritable very often especially when provoked by siblings and peers.

Patient was reported to have experienced verbal aggression and misunderstanding between her father and mother, she has witnessed several times the father's physical abuse of the mother and finally their expulsion from their father's house by their father.

Also, patient reported that she feels unloved by her mother who appreciates her siblings except her, that her mother often abandon her and does not listen to her complaints each time she has issues with her siblings. She reported that her younger ones do not respect her.

There was history of irritable and sustained low mood, easily crying, however sleep well and but she does not eat well. This is the first episode of mental illness.

She has had medical admissions or surgeries for hernia and appendix in the past. There is no history of trauma to the head, meningitis or encephalitis. She is not known to have hypertension or diabetes. No known family history of hypertension, diabetes mellitus, epilepsy or psychiatric disorder. Relationship with family members is not cordial History of pregnancy, labour, delivery, immunization and history of developmental milestone were normal and within her age range

Childhood: patient childhood was uneventful. Lived with both parents and was well taken care of.

She spent 6 years in primary school (6-11yrs) academic performance was average. No truancy.

She is JSS3 in secondary school, average academic performance. No truancy.

Her psychosocial history reveal also that she is a high-achieving student with recent academic pressure, the forth-coming Junior WAEC and she reported non cordial relationship between her and her siblings, feeling unloved by the mother and as the parents' separation. There was no history of physical or sexual abuse.

Patient does not use any psychoactive substance of addiction.

Physical Examination

The general and neurological examinations were typical. There was no obvious neurological deficits or signs of systemic illness

Initial Investigations:

EEG (routine): there normal interictal findings, no epileptiform discharges
MRI: Normal

Blood Tests electrolytes, glucose): all within normal range.

Psychological Investigations

SCL-90 and DAP reveals that somatization, neuroticism, anxiety, depression and interpersonal sensitivity scales were highly elevated. She is a very anxious individual with superficial relationship, rigid and inhibited personality, who has compulsive, introversive and self-absorbed tendencies.

Diagnosis

Psychogenic non-epileptic seizures (PNES) or Functional Neurological Disorder (FND) likely related to underlying psychological stressors.

Case 3

Presenting Complaint

A 31 years old female single unemployed who resides with the mother. She was referred to the psychology unit of ESUT Teaching Hospital Parklane Enugu-Nigeria account of recurring episodes of sudden fainting, shaking and unresponsiveness lasting 4-6 munities. The episodes happened 6 months ago occurring at home when she had verbal altercation with her elder sister on account of her desiring to look for a house to rent live outside their family house. Subsequently, the episode keeps recurring at intervals especially each time she feels sad, threatened or her rights denied. There was no history of prior history of seizures, tongue biting, and no history of urinary incontinence or postictal confusion. Also, the episode were not associated with fever, trauma or metabolic disturbances. At that first episode, she rushed to the peripheral hospital where she was treated by a general physician and with anti-malaria drugs, seven days taken the drugs the second episode occurred, this time the mother refused her request for her to join the choir group for an excursion, this time she seen by another general physician who placed her on anti-epileptic drugs, while on those medications there was no significant relief of the symptoms, the episodes continued 3-5 times a week.

Following last episode the patient was taken see a neurologist who place tab lamotrigine 300mg daily for the past one month. While still on this drug the frequency of the episode remained the same and the outcome of the neurological investigation showed that everything were normal, hence the referral.

It was reported that before onset of illness patient was anxious and stubborn person who often will always want to have it in her own way.

Patient was reported to constantly experience verbal aggression and misunderstanding from the elder sister who placed much demands on her and does not help out in cooking and house chores

Also, patient reported that she feels unloved by her mother who she claimed was over involved in her life, who neither affirms her no allow her to associate with others, or go out to have meaningful interaction with others or engage in meaningful job.

There was history of irritable and sustained low mood, easily crying, however sleep well and but she does not eat well. This is the first episode of mental illness.

There is no history of prolonged hospital admission, no history of surgery or blood transfusion in the past. There is no history of trauma to the head, meningitis or encephalitis. She is not known to have hypertension or diabetes. There is no positive family history of hypertension, diabetes mellitus, epilepsy or psychiatric disorder. Relationship with family members is not cordial, she feels unloved by some family members including the mother and the elder sister.

History of pregnancy, labour, delivery, immunization and history of developmental milestone were normal and within her age range

Childhood: patient childhood was uneventful. Lived with both parents and was well taken care of.

She spent 6 years in primary school (6-11yrs) academic performance was average. No truancy.

She also spent 6 years in secondary school, average academic performance. No truancy. She stayed at home after secondary school for 2 years because of her illness before gaining admission to study microbiology in a university which she spent 4 years and graduated with second class lower.

Her psychosocial history reveals she has heterosexual orientation. Her menarche was at about 13yrs, with circle of 5/28, no history of sexual transmitted disease, she has knowledge of contraceptives and do not use them and has not experience coitarche.

She has never been arrested. She had never gone against the law.

Patient does not use any psychoactive substance of addiction.

She describes herself as a social and helpful person.

She lives in the family house, a duplex with mother and elder sister, has a room apartment for herself. She does not enjoy living in that family house as she does not enjoy any affirmation from the mother as well as a sense of independence, she is never allowed to engage in both social and economic activities of her desire.

Physical Examination

The general and neurological examinations were typical. There was no obvious neurological deficits or signs of systemic illness

Initial Investigations

EEG (routine): there normal interictal findings, no epileptiform discharges

MRI: Normal

Blood Tests electrolytes, glucose): all within normal range

Psychological Investigations

MMPI-2 reveals that she is code type 58/85 who tends to report reactive depression, paresthesia, and numerous conflicts over sexuality both in herself and in her relationships with others as well as many family problems. She is shy, reserved individual who avoid interpersonal contact. Her Draw A Person test (DAP) reveals that **she tends to be anxious, gruff and stubborn, with impulsive tendencies and reluctance to face others and her** Symptom Distress Checklist 90 **(SCL-90)** shows that scales of somatization, neuroticism, anxiety, depression and interpersonal sensitivity scales were highly elevated.

Diagnosis

Psychogenic non-epileptic seizures (PNES) or Functional Neurological Disorder (FND) likely related to underlying psychological stressors.

Case 4

A 24 year old female law graduate who was brought by the parents to the accident and emergency department of Enugu State University Teaching Hospital Parklane Enugu-Nigeria account of seizure like experience, inability to walk and generalized body pains. It usually starts with something like fainting, breathlessness, tremors in both fingers and legs, body vibration which last for 1-3 munities, the first episode happened when she was in primary 5, it was triggered by series class tests coming up soon. She was worried, feeling that she has not prepared enough for the exam and may fail for according to her, exams usually put her on edge. However during the episode she is conscious of what happens around her but cannot be able to respond, inability to talk very well feeling the tongue was heavy and stiff. The second episode happened again in primary 6, when one of her classmate mistakenly hit her, another in JS1 when she had verbal exchange of words with a classmate. Then the episodes became more frequent from JSS1 each time she has issues with classmate or schoolmate. It usually happen when she is sad but this time, it comes with the symptoms of not been able to move or talk, confusion, disorientation and forgetfulness, severe general body pains. On account of this she was taken to a rheumatologist who place her on tab hydroxychloroquine 200mg bd, Tab sulphasalazine1g bd, Tab simvastatin 20mg daily, Tab cocodamol (500/8) 2bd on a second visit the symptoms remains the same, the following drugs were then given to her: Albendazol 400mg daily for 14 days, Tab Sulphasalazine 1g bd for one month. As the signs and symptoms unabated, she was then taken to a neurologist who after assessment immediately referred her to the clinical psychologist for expert management.

There was history of sexual abuse, as a child their nanny kissed her, sucked her nipples and made her to suck hers, she expressed the experience as enjoyable but on two other occasions two male sexually molested her by touching her breasts and kissed her, these experience she expressed that it made her frightened and anxious. This is the first episode of mental illness.

She has not had medical admissions or surgeries in the past. There is no history of trauma to the head, meningitis or encephalitis. She is not known to have hypertension or diabetes. There were positive family history of hypertension, diabetes mellitus, but no family epilepsy or psychiatric disorder. Relationship with family members is cordial

History of pregnancy, labour was delayed, delivery, immunization and history of developmental milestone were normal and within her age range

Childhood: patient childhood was uneventful. Lived with both parents and was well taken care of.

She spent 5 years in primary school academic performance was above average. No truancy.

She spent 6 years secondary school, average academic performance. No truancy.

She spent 5 years in university where she studied law.

Her psychosocial history reveals she has heterosexual orientation. Her menarche was at about 13yrs, with circle of 5/28, no history of sexual transmitted disease, she has knowledge of contraceptives and do not use them and has not experience coitarche.

She has never been arrested. She had never gone against the law.

Patient uses alcohol occasionally but does not use any psychoactive substance of addiction.

She describes herself as reserved, enjoys having deep conversions with friends and families, listening to music and tiding the house for she likes being organized.

She lives in the family in a three bed room flat, she shares a room with her sisters and she is comfortable with the accommodation.

Physical Examination

The general and neurological examinations were typical. There was no obvious neurological deficits or signs of systemic illness

Initial Investigations:

EEG (routine): there normal interictal findings, no epileptiform discharges

MRI: Normal

Blood Tests electrolytes, glucose): all within normal range

Psychological Investigations

Her Door Personality Test reveals that she may try to push her limits beyond the unknown and she may be in a treat of massive success. SCL-90 shows that Somatization, Obsessive-Compulsive, Depression, Interpersonal sensitivity, anxiety, neuroticism were

highly elevated.

DAP results indicate that she is an anxious and reserved individual with introversive self-absorbing tendency, withdrawn individuals who vaguely perceive external environment.

Diagnosis

Psychogenic non-epileptic seizures (PNES) or Functional Neurological Disorder (FND) likely related to underlying psychological stressors.

Discussion

PNES or FND is indeed a challenging condition that requires a high index of suspicion for proper diagnosis. Misconstrue and misdiagnosis as epilepsy can lead to poor management and prolonged morbidity. Key diagnostic tools include vEEG and a thorough psychological evaluation. Management should focus on dealing with the underlying psychological stressors and offering the patient needed psycho-education.

Conclusion

This cases highlight the need for high index of suspicion in assessing patients with seizure-like episodes especially those that do not respond to AEDs. It also reveals the need for comprehensive diagnostic approach to PNES and the need for patient-centered and multidisciplinary care. Early diagnosis and proper psychological intervention can significantly improve outcomes for patients with PNES and reduce morbidity.

Compliance to Ethical Standards

The entire participants filled out a consent form to declare their free will and interest in participating.

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