Original Research Paper

Volume-7 | Issue-10 | October-2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

Psychiatry

Functional Neurological Symptom Disorder (FNSD) and Psychiatry – a brief review and case series

Anuj Khandelwal Consultant Psychiatrist Kiran Multi Super Specialty Hospital and Research Centre Surat

Sonal Khandelwal Consultant Psychiatrist, Private Practice, Surat

Avinash De Sousa Research Associate Department of Psychiatry Lokmanya Tilak Municipal Medical College Mumbai

ABSTRACT Functional neurological symptom disorder and Conversion disorder are two disorders of complex etiology which are difficult to treat and vexing in nature. Literature is abreast with a biopsychosocial model for these disorders. It is also paramount that the patient be examined holistically when he presents with such disorders. The liaison between the medical team and the psychiatrist is important in the management of such disorders.

We present herewith a case series of 5 cases of conversion disorder with functional neurological symptoms being predominant and demonstrate how psychoeducation, relaxation, psychotherapy, behavior therapy and family support have led to a cure in these patients. Mild medical treatment and intense psychological treatments are the mainstay in the management of these disorders.

KEYWORDS : functional neurological symptom disorder, conversion disorder, psychoeducation, psychotherapy, social support.

Introduction:

Patients having a disorder with no identifiable organic cause have been visiting not just psychiatry out-patient department but also other medical specialties. This is evident from the literature review which mention studies conducted in patients of various different specialties having identified with illness of no proven medical or neurological etiology and have been named differently for the same illness as per the treating specialty. Symptoms with no identifiable organic cause in most neurology studies have been named as Pseudo-Neurological Symptoms (PNS) and the total visiting out-patients having PNS are anywhere between 3% to 33% of the total [1-2] with an average of about 9% to 11% of all patients [3-4]. On the other hand in studies conducted among the psychiatry out-patient department the same symptoms in a patient are mostly elaborated under the name of Conversion Disorder (CD). Once diagnosed it can be a highly disabling condition in adults as well as children [5]. If not attended to with appropriate management it may cause significant long-term impairment in functioning. This in turn may become the stepping stone for further physical & psychiatric morbidity in them [6]. Multifaceted nature of the symptoms makes the diagnosis both difficult and late which costs the patient an unnecessary extensive evaluation leading to an increased financial burden [7-8] and also adversely impacts the mental health of children by reinforcing sick roles in them [9-10]. Appropriate management of these patients involving proper addressing of psychological aspects is possible at a mental health care facility while the concerns about stigma causes barrier to early referral [11].

Conversion Disorder:

The name Conversion Disorder (CD) has its origin from the psychoanalytic theory of Freud whereby psychosocial factors were deemed as causative factors, thus leading to a functional organic divide. They believed solely in substitution of a somatic/ physical symptom for a repressed anxiety provoking idea [12-14]. But this in the light of recent advances in neuroscience is considered as one among many competing hypothesis for CD. Role of genetic factors in CD have been explored by studying CD in twins, which shows approximately 50% variance [15]. Functional brain imaging studies like fMRI studies, PET studies and SPECT data have encouraged us to ascribe conversion symptoms to neurobiological alterations in brain, justifying a dual brain - mind perspective in causation [16-18]. Also notable is the fact that most of the CD cases have stressor based onset, quick escalation of symptoms which resolve quickly, either spontaneously or after appropriate treatment [19-20]. This is to justify a functional or dynamic change which is observable in form of brain activity changes in functional brain imaging [21]. Various studies have concluded suppression/inhibition of motor and sensory brain circuits as a central common pathway for causing functional symptoms, while some have also reported additional changes involving an increased activity in prefrontal areas [22]. Thus despite wide criticism the bio-psycho-social model is most justifiable for causation of most psychiatric disorders including the CD [23].

DSM 5 and newer terminology:

Taking these facts into consideration DSM 5 has modified both the name and criteria for establishing this diagnosis in a patient. The long used CD name has been retained but with addition of FNSD in brackets. The diagnostic criteria for CD in DSM 5 include one or more symptoms of impaired or altered voluntary motor or sensory function which are incompatible with any identifiable organic cause (i.e. no medical or neurological basis). It is now proposed in DSM 5 to diagnose CD by eliciting medical evidence of not being compatible with a known neurological condition instead of considering it a diagnosis of exclusion. DSM 5 also recognizes that a period of stress is not mandatory for diagnosing CD although it may be seen in majority of cases. Another important change involves the removal of the mandatoriness to exclude the possibility of malingering or factitious disorder for diagnosing CD [24].

Symptoms of FNSD:

There is an exhaustive list of symptoms which can be found in CD & that the patients diagnosed with CD present different symptoms. Diversity seen in the presenting symptoms is because the culture to which the patient belongs influences the origin of CD symptoms [25-26]. CD symptoms include positive movements such as dystonia [27], tremor [28], gait abnormalities or other limb stereotypies [29]; motor function loss such as paresis/ paralysis [30] and sensory function loss such as visual [31] or hearing impairment [32] or loss of sensations in the limbs [33]. Certain symptoms involving loss of function like paralysis, aphonia, loss of vision, loss of consciousness are uncommon in western population, but commonly present in the developing world [34-35]. Adverse childhood experiences (ACEs) and early life trauma has been identified in literature as a significant preceding factor for CD in a patient. Stress of losing a relative or a parent has been discussed in literature as an important trigger for CD [36-37]. The incidence rate of this disorder as a whole varies widely depending upon the study population characteristics [38] and among all the various presentations of CD, functional tremor is the commonest one [39]. Formal examination results must be correlated with functional observations so as to get clarity in accurate diagnosis of CD [40].

Management of FNSD / CD:

Once diagnosed the treatment begins with an empathetic acknowledgment by the physician about the patient having a real illness and significant distress. Disclosure of the diagnosis should be accompanied with an explanation about symptom origin from an unconscious conflict & reassurance to the patient regarding the availability of an effective treatment for the illness. Validation, Education, Empathizing and Rehabilitation (VEER) have been discussed as the cornerstone for good recovery [41]. The treatment

should focus on quick recovery because with increasing duration of illness the patient starts restricting his activities which may be potentially dangerous for recovery later [42]. Various therapeutic approaches have been mentioned in the literature like graded physiotherapy by an empathetic physiotherapist in motor conversion disorder, psychotherapy [43-44], behaviour therapy (both positive and negative reinforcement), psychoanalysis and hypnotherapy with suggestions [45-46]. Strengthening the social support system for the patient and improving his coping skills are also therapeutically very important. Treating the symptoms as unreal/ fabricated doesn't help rather may cause more harm to the child. Thus counseling the family members can help them approach their child's illness in a more effective way. Studies indicate full recovery in majority of cases (70 to 90%). Early recognition & intervention is crucial for quick recovery (days to few weeks) [47].

In this case series we have tried to unfold the nature & management of functional neurological symptom disorder with the help of some interesting case examples which we encountered in our clinical practice at psychiatry department of Kiran Multi Super Speciality Hospital during a three month period spanning from June 2017 till August 2017.,

CASE 1:

A 21-year-old unmarried female hailing from a lower middle socioeconomic background family was rushed to the emergency department with severe abdominal pain since last one day and nausea with vomiting for almost every day in last 15 days. The gastroenterologist examined the patient & was unable to find any obvious organic pathology. Thus the psychiatrist was called to examine and give an expert opinion. On detailed evaluation and history taking it was found that the patient began to have nausea and vomiting three years back. Without any identifiable stressor she would have nausea and vomiting in a frequency of once a month initially and that too only after having food. For this her parents used to rush her to a nearby doctor who would give her injectable antiemetics, proton-pump inhibitors and a dextrose drip over which she used to get completely fine within some hours. Due to the fear of getting nausea/vomiting, the patient decreased her food intake and stopped having outside food. Gradually her problems increased and she would get nausea or vomiting even when empty stomach and would get ill more frequently. Due to this her social interactions and functional life got deteriorated to the extent that she got totally home bound. Doctors conducted multiple blood and radiological investigations but were unable to find any organic pathology. This time despite the treatment by various doctors, the illness episode continued for 15 long days and she started having stomach pain too.

On physical examination, the patient was cachexic with body weight (31 kg) much lower than that expected for her age. Her Mental Status Examination (MSE) was also within normal limits with no sign of depression. She had little concern for the marked impairment in social and functional areas of life, rather was majorly preoccupied with stomach pain. Eight sessions of supportive therapy (ST), two sessions of relaxation training (RT) and injectable multivitamins with suggestions of good improvement on treatment were conducted. Psychoeducation (PE) of family members regarding the nature of illness and the required change in their behavior was conducted. They were encouraged to be empathetic and supportive rather than criticizing. On discharge the need for gradual fall back to the daily routine with return to the premorbid level of social and personal functioning was emphasized. After discharge the patient was given short term tasks and motivated towards the gradual gain of function in all the areas of her life. The patient with successful completion of short term tasks became more receptive to the idea of having problem in body functioning rather than a true damage. She became more and more optimistic about gradual gain of body functions and this marked a drastic change with significant improvement on follow up visits. She perceived near total improvement by the end of 2 months.

CASE 2:

A 13-year old male hailing from a lower socioeconomic background family was brought with sudden loss of vision. He was evaluated by the ophthalmologist and neurologist who after detailed evaluation and investigations found no signs of organicity. Thus the child was referred to psychiatry department where on detailed evaluation and history taking it was found that the patient's mother who had a psychiatric illness committed suicide one year back. During his mother's illness the patient used to keep a watch on her so as to refrain her from running away from house. At times the patient felt extremely helpless in managing her while at other times felt sad looking at her illness. This continued for two long years until his mother committed suicide. After her death the patient would blame self for not taking appropriate measures to save his mother and would cry remembering her. Immediately after his summer vacations on second day of school he complained of sudden vision loss beyond three to four meter distance. He missed his schools, would not go to play with his friends & remain home bound for most of the day. Was shown to multiple doctors with minimal improvement by the time he was brought to us.

On MSE the child's psychomotor activity was decreased & reaction time increased. His mood was sad and thinking revealed anhedonia with no hopelessness or suicidal ideations. Six sessions of rational emotive behavior therapy (REBT) for the irrational beliefs about his role in mother's death, four sessions of ST with regular exercise of eye muscles, two sessions of RT, Escitalopram 5mg/day and tear eye drops with suggestions of good improvement on treatment were conducted. The child was psychoeducated regarding recognizing and using the social support system during the time of crisis. PE of father regarding the nature of illness and the required empathetic and supportive care was done. With daily therapy during indoor patient treatment the child managed to get to his premorbid level of vision within three weeks and maintained this improvement on follow up visits (2 months).

CASE 3:

A 12-year old male hailing from lower socioeconomic background family was brought with complaints of sudden onset headache since last 20 days. On detailed evaluation and history taking it was found that his dearest maternal uncle died of heart attack one and half months back. Immediately after returning from uncle's funeral the patient got admit to a hospital with complaints of stomach ache. On detailed evaluation no organic illness could be deduced and he improved with symptomatic treatment. Immediately after discharge from hospital at home the child complained of headache. For this the child was shown to various doctors including an ophthalmologist who did all relevant investigations all of which came out to be in normal limits. Symptomatic treatment of headache resulted in no improvement. During the start of illness he would deny going to school because of headache but would be seen playful the rest of the day. For this reason the patient's father would criticize and blame him for fabricating the illness. Gradually thereafter the child started complaining of headache even at other times of the day such that he would be seen totally home bound.

On MSE the child's mood was euthymic and thinking revealed no signs of depression. The child was cheerful but revealed a sense of loss with the death of maternal uncle. He was preoccupied about the good times which he spent with his late uncle and that those times will not come again. Three sessions of REBT with ST, two sessions of RT, two sessions of coping skills training with suggestions of good improvement on treatment were conducted. The child was psychoeducated regarding recognizing and using the social support system during the times of headache. PE of parents regarding the nature of illness and exacerbation of illness with criticism was done. They were helped to provide the child with empathetic and supportive care. The need for getting back to daily routine was emphasized and the child was encouraged for the same by giving him short term tasks to finish. The patient learned to use some good ways of distracting self whenever headache troubled him. He was psychoeducated that there was no damage to his nervous system, rather the problem was with its functioning. The distraction methods actually improved his symptoms which made him receptive to the diagnosis and thus made him less anxious. The child within one month showed near total improvement.

CASE 4:

A 10-year old female hailing from lower middle socioeconomic background family was brought to us with complaints of left side abdominal pain of one month duration. The child was evaluated by a pediatrician who found no significant findings on physical examination and detailed investigations. Thus was referred to psychiatry department where we discovered adverse childhood experiences of exposure to videos containing sexual content and inappropriate touch by cousin brothers. Immediately after the first incident a sudden change in behavior involving decreased social interactions and crying spells was noticed. On disclosure of the said event instead of showing acknowledgment, empathy, support and care,

her father invalidated it by considering her immature to understand the true meaning of various human interactions. Also the paternal aunt invalidated the incidents saying that her son could have never done such a thing. This caused the patient feelings of helplessness, anxiety and insecurity in her house and around her own people. By the time she was 9 year old her menarche appeared with blood clot in urine. Noticing it the patient got extremely anxious thinking that how could she bleed from her vagina. Mother also panicked as it was too early for a girl to have it but later she tried to explain the patient that it was absolutely normal for a girl to have bleeding from vagina. The patient got partially convinced but still speculative about what happened and started complaining of left side abdominal pain. The pain was initially noticed to be present only before the school time and thus she would take many school holidays. But once the school time got over she would mostly be seen playful. Taking this into consideration her grandmother and mother would blame her for fabricating the symptoms so as to avoid going to school. Gradually the symptoms increased in duration and frequency such that the patient would not be playing or going out for most of the time during the day. The patient underwent numerous investigations and treatments from multiple doctors but perceived minimal improvement in pain.

On MSE the child's affect was anxious and thinking revealed anxiety about all the past issues with no concern about the marked impairment in social and functional areas of life. In this case we decided to take her REBT sessions in presence of parents so as to help them understand the root cause of her problems. Two REBT sessions with SC, one session of RT, one session of Sex Education (SE) & Safe Touch Practices (STP) along with suggestions of good improvement on treatment were conducted. The child was also started on Tablet escitalopram 2.5mg/day for anxiety symptoms. She was psychoeducated regarding recognizing and using the social support system during the times of anxiety or insecurity. PE of parents regarding girl child safety, the nature of illness and exacerbation of illness with criticism was done. They were helped to provide the child with empathetic, supportive and safe environment. Various distraction methods were discussed which she used with success during the periods of abdominal pain. The need for getting back to daily routine was emphasized and the child was encouraged to do her daily chores regularly. The child within one month perceived near total improvement with no pain.

CASE 5:

A 24 year old female was brought to our emergency department with sudden onset of jaw and left hand tremors. Was referred from a private hospital where the patient was admitted initially and was found to have no detectable pathology on investigations. On detailed evaluation and history taking it was found that the patient's new born nephew was recently detected to have a heart valve defect. Due to this the patient was extremely anxious as she started remembering her brother who died of a similar heart disease. Within next two days the patient began to have jaw and left hand tremors for which her family members rushed her to a nearby hospital. But perceiving minimal improvement was referred to us and we admitted her under Psychiatry care. She would always be seen overcrowded with relatives showing concern for her. Her mother would cry and try to pamper her even when advised not to do so. Over next twelve hours the patient further developed regressed behavior in form of excessive clinginess, crying spells and sudden unresponsiveness lasting for 10 to 15 minutes. Next she developed a few minutes episode of possession spell during which she revealed herself as late grandmother who had come to take the patient with her. PE of the relatives and mother was started first as their behavior was increasing the illness in patient. Side by side the patient was started on REBT, SC and jaw/hand exercises. Along with this the patient was also given Tablet Escitalopram 5mg/day for anxiety symptoms. Family members were helped to provide the patient with an empathetic and supportive environment, rather than a sympathizing and pampered one. The need for getting back to daily routine was emphasized and the patient was discharged within 3 days. REBT sessions were continued weekly for 1 month during which some distraction techniques were also discussed with her. One of those was to move her right hand whenever she got tremor of left hand. With this she noticed a successful stoppage in the left hand tremor and thus was convinced by the idea that there was no damage to her nervous system, rather the problem was with its functioning. She was psychoeducated about the normal physiology of body functioning and how it was getting affected. By the end of one month there was a near total improvement.

Discussion;

Here we have discussed a common and highly disabling under researched topic sometimes referred as the blind spot in psychiatry [48-49] with the help of clinical case examples. The delay in diagnosing the disorder and criticism by the close ones clearly exacerbated the functional problems in our patients which strongly supports the viewpoint discussed. This underscores the lack of awareness about the true nature and management of functional neurological disorders among the clinicians in our society. This in turn makes the role of psychiatrist very crucial so as to spread awareness about the increasing presence of such notorious disorders in clinical practice. Referral to a psychiatrist is important for complete exploration and management of psychological issues related to past trauma in these patients. Unfortunately these patients are referred to the psychiatrist after a long period of unsuccessful management and multiple investigations. In case 1 the girl was referred for psychiatric assessment after a long period of 3 years and by that time she got totally home bound with minimal social interactions. This clearly demonstrates the adverse consequences on quality of life of a patient with FND due to a delay in appropriate management because of lack of timely referral to a mental health care facility. This shows that although FND is no longer mentioned in DSM 5 as a diagnosis of exclusion but is still very much treated this way by clinicians' in general clinical practice. This highlights the importance of giving equal concern to the subjective experience of a person no matter all the investigation reports may come to lie in normal limits. Once all the above mentioned patients visited our hospital the appropriate diagnosis and management was immediately done which highlights the importance of good liaison and referral practice in medicine. Collaborative treatment relationship helped us to provide good and effective services to our patients.

Once diagnosed all emphasis was to decrease the distress of our patients and their family members. This was achieved gradually in a step wise manner by recognizing and acknowledging the patient's illness and distress as truly present and not merely a fabrication work by the patient. The next step was to explore the history for identifying any trauma or stressor if really present. But as righteously excluded from the mandatory criteria of CD in DSM 5, not in all the cases we were able to find trauma/stressor. But noteworthy is the fact that except for case 1 in all other cases, the history of a major trauma or stressor was present. Additional REBT sessions were conducted in these cases so as to work on the underlying psychological conflicts. Alleviation of pain from the past trauma through REBT sessions helped in fast recovery. Whatever might be the case ST, RT and PE of the patient with suggestions of good improvement along with PE of family members formed the heart of treatment for all our patients. As per the case requirement DT and exercises of the affected parts was done. Thus we emphasize that in FND not one size fits all rather we need to form specific management plan which varies as per the specific case requirements. Quick improvement in all our cases justifies researchers who blamed functional and dynamic change in brain activity as the pathology in FND.

Through this research paper with the help of five interesting case examples we have tried to unravel the characteristic presentation and management of the so called blind spot in psychiatry. We support the more comprehensive biopsychosocial approach while treating the psychiatric disorders and strongly oppose the various reductionistic viewpoints mentioned in literature. We suggest that further studies having a control group, a larger sample size and monitoring for greater periods of time should be undertaken so as to enhance our understanding of the topic. This might help us in increasing the possible treatment modalities for patients with FND.

REFERENCES:

1. Stone J, Carson A, Duncan R, Coleman R, Roberts R, Warlow C, Hibberd C, Murray G, Cull R, Pelosi A, Cavanagh J, Matthews K, Goldbeck R, Smyth R, Walker J, Macmahon AD, Sharpe M. Symptoms 'unexplained by organic disease' in 1144 new neurology out-patients: how often does the diagnosis change at follow-up? Brain 2009;132(10):2878-88.
2. Gigineishvili DA, Shakarishvili RR. Unexplained somatic symptoms and underlying psychologic disorders in the neurology clinic. Georgian Med News 2006;(132):50-3.
3. Carson AJ, Ringbauer B, Stone J, et al: Do medically unexplained symptoms matter? a prospective cohort study of 300 new referrals to neurology outpatients. J Neurol Neurosurg Psychiatry 2000; 68:207–210
4. Lempert T, Dieterich M, Huppert D, et al: Psychogenic disorders in neurology: frequency and clinical spectrum. Acta Neurol Scand 1990;82:335–40
5. Schaefert R, Honer C, Salm F, Wirsching M, Leonhart R, Yang J, Wei J, Lu W, Larisch A, Fritzsche K. Psychological and behavioral variables associated with the somatic symptom severity of general hospital outpatients in China. Gen Hosp Psychiatry 2013;35(3):297-303.
6. Krasnik CE, Meaney B, Grant C. A clinical approach to paediatric conversion disorder:

VEER in the right direction. Available from: http:// www.cpsp.cps.ca/ uploads/ publications/ RA conversion disorder.pdf
7. Keltner JL, May WN, Johnson CA, Post RB. The California syndrome. Functional visual complaints with potential economic impact. Ophthalmology 1985;92(3):427-35.
8. Leary PM. Conversion disorder in childhood—diagnosed too late, investigated too much? J Royal Soc Med 2003;96(9):436-8.
9. Uldall P, Alving J, Hansen LK, Kibaek M, Buchholt J. The misdiagnosis of epilepsy in children admitted to a tertiary epilepsy centre with paroxysmal events. Arch Dis Child 2006;91:219 21.
10. Ferrara J, Jankovic J. Psychogenic movement disorders in children. Mov Disord 2008;23:1875 81.
11. Uguz S, Toros F. Sociodemographic and clinical characteristics of patients with conversion disorder. Turk Psikiyatri Derg 2003; 14:51-8.
12. Breuer J, Freud S. Studies in hysteria. In J. Strachey (Ed. & Trans.), The standard edition of the complete psychological works of Sigmund Freud (Vol. 2, pp. 1-17). London, England: Hogarth Press ; 1895.
13. Freud S. The neuro-psychoses of defence. In J. Strachey (Ed. and Trans.), The standard edition of the complete psychological works of Sigmund Freud, 3, 45-61. London, England: Hogarth Press ; 1894.
14. Fenichel O. Psychoanalytic theory of neurosis. London, England: Routledge & Kegan; 1946.
15. Jang KL, Paris J, Zweig-Frank H, Livesley WJ. Twin study of dissociative experience. J Nerv Ment Dis. 1998;186(6):345–51.
16. Carson AJ, Brown R, David AS, Duncan R, Edwards MJ, Goldstein LH, Grunewald R, Howlett S, Kanaan R, Mellers J, et al. Functional (conversion) neurological symptoms: research since the millennium. J Neurol Neurosurg Psychiatry 2012;83(8):842–50.
17. Perez DL, Barsky AJ, Daffner K, Silbersweig DA. Motor and somatosensory conversion disorder: a functional unawareness syndrome? J Neuropsychiatry Clin Neurosci 2012;24(2):141–51.
18. DL Pereza, BA Dworetzkyd, BC Dickersona, L Leungc, R Cohnc, G Basletc, DA Silbersweigc. An Integrative Neurocircuit Perspective on Psychogenic Non-Epileptic Seizures and Functional Movement Disorders: Neural Functional Unawareness. Clin EEG Neurosci 2015; 46(1): 4–15.
19. Kozlowska K. Healing the disembodied mind: contemporary models of conversion disorder. Harv Rev Psychiatry 2005;13(1):1–13.
20. Aybek S, Kanaan RA, David AS. The neuropsychiatry of conversion disorder. Curr Opin Psychiatry 2008;21(3):275–80.
21. Ejareh dar M, Kanaan RA. Uncovering the etiology of conversion disorder: insights from functional neuroimaging. Neuropsychiatr Dis Treat 2016;12:143-53.
22. Werring DJ, Weston L, Bullmore ET, Plant GT, Ron MA. Functional magnetic resonance imaging of the cerebral response to visual stimulation in medically unexplained visual loss. Psychol Med 2004;34(4):583–9.
23. Papadimitriou G. The "Biopsychosocial Model": 40 years of application in Psychiatry. Psychiatriki 2017;28(2):107-10.
24. American Psychiatric Association. Diagnosis and Statistical Manual of Mental Disorders. 5th ed. Washington, DC: American Psychiatric Association; 2013.
25. Seligman R, Kirmayer LJ. Dissociative Experiences and Cultural Neuroscience: Narrative, Metaphor and Mechanism. Cult Med Psychiatry 2008; 32:31-64.
26. Kirmayer L, Sartorius N. Cultural Models and Somatic Syndromes. Psychosom Med 2007; 69:832-70.
27. Stephen CD, Sharma N, Callahan J, Carson AJ, Perez DL. A Case of Functional Dystonia with Associated Functional Neurological Symptoms: Diagnostic and Therapeutic Challenges. Harv Rev Psychiatry 2017 (in press).
28. James L, Ghosh D. Artistic Clues to Psychogenic Tremor Using Pen and Paper. J Pediatr 2017;7:8-10.
29. Baizabal-Carvallo JF, Jankovic J. Functional (psychogenic) stereotypies. J Neurol 2017;264(7):1482-7.
30. Schonfeldt-Lecuona C, Lefaucheur J-P, Lepping P, et al. Non-Invasive Brain Stimulation in Conversion (Functional) Weakness and Paralysis: A Systematic Review and Future Perspectives. Front Neurosci 2016;10:140.
31. Mulugeta S, Tesfay K, Frank R, Gruber-Frank C. Acute Loss of Vision in a Young Woman: A Case Report on Psychogenic Blindness. Ethiopian J Health Sci 2015;25(1):99-104.
32. Parodi M, Rouillon I, Rebours C, Denoyelle F, Loundon N. Childhood psychogenic hearing loss: Identification and diagnosis. Eur Ann Otorhinolaryngol Head Neck Dis 2017;5:S1879-96.
33. Stone J, Vermeulen M. Functional sensory symptoms. Handb Clin Neurol 2016;139:271-81.
34. Deveci A, Omen E, Demet M, İçelli İ. Sociodemographic and clinical features of outpatients with conversion disorder in the psychiatry department of a university hospital. Anadolu Psikiyatri Dergisi 2002; 3:28-33.
35. Pu T, Mohamed E, İmam K, el-Roey AM. One hundred cases of hysteria in Eastern Libya. A sociodemographic study. Br J Psychiatry 1986;148:606-9.
36. Chandraselearon R, Goshami U, Sivakuner V, Chitralekha KT. Hysterical neurosis: a follow up study. Acta Psychiatr Scand 1994;89:78-80.
37. Ford CV, Folks DG. Conversion disorders: an overview. Psychosomatics 1985; 26:371-83.
38. Stefansson JG, Messina JA, Meyerowitz S. Hysterical neurosis, conversion type: clinical and epidemiological considerations. Acta Psychiatr Scand 1976;53(2):119-38.
39. Schwingenschuh P, Deuschl G. Functional tremor. Handb Clin Neurol. 2016;139:229-233.
40. Scott A Marshall et al. Conversion Disorders. Medscape Updated: Nov 09, 2015.
41. Catherine E. Krasnik, Brandon Meaney, Christina Grant. A clinical approach to paediatric conversion disorder: VEER in the right direction. Canadian Paediatric Surveillance Program. 2013.
42. American Psychiatric Association Task Force on DSM-IV, author. Diagnostic and Statistical Manual of Mental Disorders, 4th ed (text revision) Washington, DC: American Psychiatric Association; 2000. American psychiatric association, Psych.org/MainMenu/Research/DSMIV.aspx.
43. Mayor R, Howlett S, Gruenewald R, Reuber M. Long term outcome of brief augmented psychodynamic interpersonal therapy for psychogenic nonepileptic seizures: Seizure control and health care utilization. Epilepsia. 2010;51:1169–76.
44. Kirsch I. Hypnosis and placebos: response expectancy as a mediator of suggestion effects. Anales de Psicologia 1999;15:99– 110.
45. Allin M, Streeruwitz A, Curtis V. Progress in understanding conversion disorder. Neuropsychiatr Dis Treat 2005;1(3):205-9.
46. Stone J. Functional neurological symptoms. Clin Med 2013;13(1):80-3.
47. Baek K, Doñamayor N, Morris LS, Strelchuk D, Mitchell S, Mikheenko Y, Yeoh SY, Phillips W, Zandi M, Jenaway A, Walsh C. Impaired awareness of motor intention in functional neurological disorder: implications for voluntary and functional movement. Psychol Med 2017;47(9):1624-36.
48. Carson A, Lehn J. Epidemiology Handb Clin Neurol 2017;139: 47–60.
49. Keynejad RC, Carson AJ, David AS, Nicholson TR. Functional neurological disorder: psychiatry's blind spot. Lancet Psychiatry 2017;4(3):e2-e3.