

Hypersexual Behavior Following Craniocerebral Trauma An Experience with Five Cases

Eghwurdjakpor PO¹ and Essien AA²

1 Neurosurgical Unit, Department of Surgery and **2** Department of Neuropsychiatry
University of Port Harcourt Teaching Hospital. Port Harcourt, Nigeria

Abstract: Hypersexual behaviour is a recognized complication of head injuries which can be a source of great distress to patients and persons with whom these patients share significant relationships. In this article, we describe 5 patients who exhibited aberrant sexual behaviours following traumatic brain injury and discuss the relevant literature.

Key words: Brain injury, Disinhibition, Hypersexuality.

Introduction

Disorders of sexual function, even though relatively common following traumatic brain injury, have not received commensurate attention in the literature on the complications of head trauma. Sexual problems following injury are usually the result of interaction between the psychological makeup of the injured person, his sociocultural background and the neurological sequelae of the injury itself [1].

Hypersexuality is a rare but well recognised sequela of brain injury [2]. It has been defined as the subjective experience of loss of control over sexuality [3]; and consists of increased need or intense pressure for sexual gratification. It has been successfully produced in experimental animals [4]; and much of our current knowledge about the subject is the result of studies of non-traumatic brain injury [5]. Its occurrence therefore offers useful insight regarding the anatomical basis of normal human sexual behaviour and provides important evidence about the neurological basis of aberrant behaviours [6]. In this paper, the authors describe 5 patients in whom hypersexual behaviour manifested following traumatic brain injury. Relevant literature on hypersexuality following brain injury is also reviewed.

Case 1

A 24-year-old male was admitted to the hospital in coma due to severe head injury following a road accident. He also sustained an open left femoral and left Cole's fractures. His blood pressure, pulse and temperature were within normal limits. He had a Glasgow Coma score of 3 at the time of admission. Ocular examination revealed normal sized pupils, both of which reacted sluggishly to light. His limbs were flaccid and all tendon reflexes were depressed. Skull x-ray showed no bony injury. He remained deeply comatose for seven weeks after which his level of consciousness started to improve gradually. By the end of the tenth week, he had recovered sufficiently to the extent where he could obey verbal commands, but remained aphasic until the twelfth week. At this time, he began to manifest hypersexual behaviour. The latter was first signalled by the strong arousal anytime he was being attended to by female ward staff. This was soon replaced by increasing agitation whenever a female was nearby; and subsequently - when his ability to verbalise returned - his unabashed demand for sex, and finally his attempt to grab a female attendant. Besides minor tranquilizer which was given on account of his agitation, no specific

medication was administered to control his altered sexual behaviour. He progressively became less agitated in the presence of female staff and by the end of the second week after onset of hypersexual behaviour, he had completely normalised.

Case 2

A 43-year-old married businessman was admitted in coma following a road traffic accident. He was said to have had seizures at the scene of accident and also while being transported to hospital. On arrival, his blood pressure was 140/90 mm Hg, pulse was 82 beats per minute and temperature was 38.5 °C. His Glasgow coma score was 3. Ocular examination revealed minimal horizontal eyeball movements with unequal pupils (right = 3 mm, left = 5 mm) both of which reacted sluggishly to light. Tendon reflexes were normal. There was evidence of a linear fracture of the right parietal bone on skull x-ray. The brain was normal on CT brain. There was no intracranial collection. Patient fully regained consciousness after three weeks. However, he was uninterested in activities going on around him and always kept his hand inside his pyjamas to masturbate. Thereafter, he openly masturbated several times. No specific medications were given. After two weeks however, it was observed that he was masturbating less frequently, and by the end of the third week, he had stopped completely.

Case 3

A 33-year-old housewife and mother of 2 children was admitted with moderate head injury following a ghastly road accident. She also sustained a mid-shaft fracture of left humerus and multiple soft tissue injuries to the face and body. Glasgow Coma score was 12 on admission. Ocular examination revealed normal sized pupils which reacted normally to light. Motor function examination revealed no deficits, and tendon reflexes were normal. The skull x-rays revealed no abnormality. She recovered rapidly and was fully conscious by the end of the second week, but remained aphasic until the fourth week. Alteration of sexual behaviour was signalled at this time when she suddenly exposed her breasts when she had a female visitor, and started using her visitor's hands to massage them. When eventually she could verbalise, she frequently used foul language until she finally demanded to go home to fulfil her sexual urge. No medication was given on account of her behavioural change; but following careful reprimands, she stopped exposing her breasts and

her use of foul language gradually diminished and finally stopped.

Case 4

A 29-year-old unmarried man was admitted following head injury sustained when he was struck on the head with a blunt object during a fight. There was no loss of consciousness and he had no seizures. His social history revealed that he had been smoking marijuana regularly for the past 2 years. On examination, there was a deep laceration across his forehead which extended to his right parietal area. He was fully conscious and alert (Glasgow coma score = 15) and motor function examination revealed no deficits. Skull X-ray showed depressed fracture of the right frontal bone. He was managed conservatively and clinical course was smooth; and he was discharged from hospital two weeks later. The very day he was discharged however, it was reported that he went out to a pool of stagnant water in the street close to his home and there he undressed and masturbated. He was quickly rushed indoors by his embarrassed family members, but this however, became a regular occurrence thereafter. Patient was brought to outpatients' clinic by his family only once during which they were reassured, but thereafter he was lost to follow-up.

Case 5

A 27-year-old motorcyclist was admitted for severe head injury following a road traffic accident. Associated injuries sustained include fracture left tibia and fibula. On examination, he had multiple abrasions on his face and body. His blood pressure, pulse and temperature were elevated. Pupillary examination revealed anisochoria with a pin-point left pupil which was not reactive to light and a normal sized right pupil which reacted sluggishly. There was spastic paresis of his right upper and lower limbs with exaggerated tendon reflexes on the right side. Skull x-ray revealed no bony injury. He recovered consciousness after 4 weeks. Two weeks later, it was observed that he was becoming very talkative and somewhat aggressive. However, one day following a heated argument with his girlfriend who had come to visit, he attempted to rape her in the open ward. He was strongly reprimanded for this action, and although no specific medication was given, he never repeated it. He however continued to be aggressive, but this was successfully controlled with chlorpromazine.

Discussion

Hypersexuality, which is characterised by an unbearable need for frequent genital stimulation, is often manifested as an increase in frequency or change in types of sexual behaviours which fail to produce long-term sexual and emotional satisfaction. It is believed that the latter is responsible for the heightened desire for further stimulation. Hypersexuality has been associated with head injury and brain operations [6-11]. It is thought to be the outcome of insults to neuroanatomical structures which regulate sexual behaviour [12]. Damage to the orbital parts of the frontal lobes is believed to cause deviant sexual behaviour as a result of removal of moral-ethical restraints [1,13-15]. In their description of the core characteristics of the regional prefrontal syndromes, Duffy and Campbell point out that injury to the orbitofrontal area gives rise to disinhibition. Patients with injury in this location exhibit stimulus-driven behaviour with poor

impulse control, diminished social insight, explosive aggressive outbursts, emotional lability, inappropriate verbal lewdness, distractibility, jocularity and lack of interpersonal sensitivity [16]. Involvement of deep hemispheric structures including the pituitary gland, amygdala, thalamus and hypothalamus can lead to disruption of normal hormonal mechanisms and disinhibition of behaviour [17]. Furthermore, decreased awareness of what constitutes appropriate behaviour and preoccupation with their individual sexual needs above their partners' are believed to be due to frontal, right hemispheric and temporal lobe injury.

All the patients described in this report exhibited disinhibition of behaviour at various levels ranging from inappropriate verbal lewdness and exhibitionism through aggressiveness, grabbing, compulsive masturbation and attempted rape. These are similar to those of other reported cases of hypersexuality in the literature. Some of the reported disordered behaviours include: impaired judgement, egocentricity, poor memory and insensitivity to the partner [18]. Sebit et al described a 51-year-old male patient who presented with recurrent outbursts of aggression, sexual indiscretion, hypersexual behaviour and hoarding litter following head injury sustained in a road traffic accident [10]. Miller et al described 8 cases in which hypersexual behaviour or altered sexual preferences occurred following medial basal-frontal or diencephalic injury [6]. Gorman and Cummings also reported two cases of markedly increased sexual activity resulting from septal damage following shunt insertion [11].

The process of recovery following brain injury can roughly be divided into three stages which are characterised by changing and overlapping patterns of disturbance of sexual behaviours. They include early (acute), middle (post-acute) and late (re-entry) stages [5,18]. The early stage is characterised by exhibitionism, masturbation, sexual delusions and confabulation. The latter extends into the post-acute stage which is characterised by inappropriate verbal allusions, physical or verbal approaches and drive disturbance. Particularly noteworthy abnormal behaviours in the re-entry stage include insensitivity to others, poor judgment, memory disturbance and altered body image and self-concept. Even though the behaviours exhibited by the patients described in this paper showed a significant overlap among the three identified stages, all the behaviours occurred shortly after coming out of coma or soon after discharge from hospital.

Two main strategies (pharmacologic and non-pharmacologic) are generally adopted in the management of patients with hypersexual behaviour. The common practice is, however, to initially apply non-pharmacologic methods, with medications being used only when the former fail to produce the desired results [19,20]. Non-pharmacologic methods of treatment that have been applied include: psychotherapy, changes in the patients' environment and cognitive behavioural modification such as correcting misidentification of persons, engaging the patients in various activities, and rendering certain behaviours such as undressing more difficult. Patients whose involvement in self stimulation is excessive may be redirected to keep the self-stimulation socially appropriate,

where possible. Where this is not feasible, the patients must be afforded sufficient privacy to minimise public discomfort or violation [18]. This might involve moving them to different rooms. Attempts to distract and redirect their behaviour with conversation, food, or other activities may also be successful [19].

Pharmacological treatment is aimed at suppressing sexual fantasies, urges and behaviours [19]. A number of agents have been used with varying degrees of success, while some are still at various stages of clinical trial. Whereas the majority of the agents do not have serious side effect, significant untoward effects have been reported with others [20]. Some of the most commonly used ones include: anti-androgens (eg. cyproterone acetate) which reduce testosterone levels and thereby impair sexual functioning and eliminate hypersexual behaviour, estrogens, gonadotropin-releasing hormone (GnRH) analogues, and serotonin reuptake inhibitors such as citalopram [21,22]. Serious side effects that have been reported with some of these medications include syndrome of inappropriate ADH secretion, hepatic dysfunction, thromboembolism, erectile dysfunction and osteoporosis, among others .

Conclusion

In conclusion diverse abnormal sexual behaviours can occur following traumatic brain injury. It would appear that hypersexual behaviours are more likely to occur during the early stages of recovery following the original insult and remit spontaneously.

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