

## **HYPERSEXUALITY IN NEUROCOGNITIVE DISORDERS IN ELDERLY PEOPLE – A COMPREHENSIVE REVIEW OF THE LITERATURE AND CASE STUDY**

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### **SUMMARY**

**Background:** *Hypersexuality is defined as an increase in libido. It is often confounded with sexual disinhibition and inappropriate sexual behavior directed against oneself or against others. It is described in 2.9 to 8% of patients living at home and in 3.8 to 7% of patients in institutions. The pathophysiology of hypersexuality is complex. Several brain areas are involved. The psychological factors are also important. We found it useful to present a clinical case of a patient who presented with symptoms of hypersexuality and to discuss the diagnosis and the management.*

**Methods:** *Data collection was based on the case of a patient hospitalized in the Department of Psychosomatic medicine in CHU Mont-Godinne - Yvoir - Belgium in February 2013. For the literature review, we used the database PubMed with the following keywords: hypersexuality, dementia. A total of 40 articles were selected for this study.*

**Results:** *The patient had symptoms of hypersexuality, and hyperorality in the context of delirium induced by benzodiazepine withdrawal. A blood test and brain imaging were normal. She was put under risperidone 2 mg with complete resolution of symptoms within a few days.*

**Conclusion:** *The diagnosis of Kluver-Bucy syndrome in the context of a minor neurocognitive disorder was retained. Management is mainly non-pharmacological using behavioral techniques. The education of the patient, his partner and caregivers are essential. Pharmacotherapy is sometimes necessary. It is reserved as a last resort because of the serious side effects of the drugs used.*

**Key words:** *hypersexuality – dementia - Kluver-Bucy - neurocognitive disorder - delirium*

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### **INTRODUCTION**

Hypersexuality is defined as an increase in libido. It is often confused in the literature with sexual disinhibition and inappropriate sexual behavior directed against oneself or against others (Derouesné 2005). Many myths surround the subject of sexuality in the elderly, and some normal behavior can be interpreted as hypersexual (Wallace 2008). In fact, some studies have shown that 50-80 % of persons older than 60 years continue to have regular sexual activity (more than once per month) (Comfort 1991, Marsiglio 1991). Similarly, a recent study showed that 53% of people between 65 and 74 years old and 26% of people between 75 and 84 years old had a regular sexual activity (Lindau 2007). Kinsey et al. considered this as a decrease in the consistency and strength of sexual activity rather than a decrease in desire (Kinsey 1948).

Inappropriate sexual behavior is public masturbation, and inappropriate exposure of genitalia, excessive kissing, and inappropriate touching. These behaviors can be conventional or "paraphilic" (directed against children, pets, or non-consenting persons) (Kafka 1992). It can also manifest as excessive preoccupation with sex, sexual hallucinations and delusions of the partner's infidelity (Kuhn 1998, Higgins 2005). Derouesné divided symptoms of hypersexuality in dementia into three categories: "intimacy seeking" that does not necessarily have a sexual purpose, "definite sexual

behaviors" and "disorders of social conventions" where the patient becomes impulsive, ignorant of the feelings of the partner and does not realize the inappropriateness of the context (Derouesné 2009).

The prevalence of hypersexuality in dementia is difficult to estimate because of the difficulty of the clinician in exploring sexuality in patients suffering from dementia and the absence of a clear definition of the term (Canevelli 2012). Overall, inappropriate sexual behaviors are described in 2.9 to 8% of patients residing at home and in 3.8 to 7% of patients in institutions (Derouesné 2005). This prevalence is higher among men with advanced stage dementia (Alagiakrishnan 2005).

The pathophysiology of hypersexuality is complex. Several brain areas are involved. Oppenheim described a behavioral disinhibition with a sexual component in the context of frontal lobe dysfunction which he called "Witzelsücht" (Oppenheim 1889). Hypersexuality is found mainly in frontal and temporal lesions (Robinson 2003, Lesser 2005, Series 2005). Dysfunction of the frontal lobe causes a disruption of the inhibitory mechanisms of sexual behavior, while a temporal lesion disrupts the emotional and intellectual understanding of sexual desire. This kind of damage is mostly found in fronto-temporal dementias such as Pick's disease, and Lewy Body dementia. Other brain regions have been implicated as in Huntington's disease where 12% of men and 7% of women were found to have symptoms of hypersexuality, promiscuity and pedophilia and

sometimes in early illness, sexual infidelity. This is probably due to changes in the striatal area (Cummings 1995). Similarly, damage to the limbic system could cause a change in sexual orientation (Miller 1986). Trauma to the temporal lobes can cause symptoms of hypersexuality and inappropriate sexual behavior as in Kleine-Levin syndrome (Arnulfi 2005) and Kluver-Bucy syndrome (Goscinski 1997).

Kluver-Bucy syndrome was first described by Kluver and Bucy in 1939 following three observations on male monkeys that underwent bilateral temporal lobectomy (Kluver 1939). The syndrome is characterized by hyperorality, hyperphagia, distractibility, hypersexuality, a change in sexual orientation, visual agnosia and loss of aggression or fear reflexes also called placidity (Bucy 1955). This syndrome is rarely complete in humans. Symptoms of Kluver-Bucy syndrome can be found in disorders affecting the temporal lobe such as head trauma, cerebral anoxia, Alzheimer's disease and other dementias, adrenoleukodystrophy, unilateral temporal lobectomy, and postictal state in epilepsy (Devinsky 2003).

Particularly in dementia, symptoms of Kluver-Bucy were reported in 7% of cases of Alzheimer's disease (Burns 1990). In Pick's disease, some studies have shown the presence of the syndrome in 20% of patients over an observation period of two years (Miller 1995). One study reported the presence of inappropriate sexual behavior in vascular dementia (Alagiakrishnan 2005).

Hypersexuality is not only explained by neurological lesions. It is also found in psychiatric disorders (depression, mania, schizoaffective disorder, substance abuse, and obsessive-compulsive disorder) (Lesser 2005, Series 2005). Similarly, it can be found in delirium that can be caused by metabolic disturbances, infections and by drugs such as benzodiazepines, anticholinergics, dopaminergics, and stimulants. It can also be found in intoxication / withdrawal of ethanol (Lesser 2005, Series 2005).

Other factors may also be involved in the development of sexually inappropriate behavior. Testosterone is known for its important role in sexual disinhibition and aggressive behavior; these behaviors are in fact more common in men (Balthazart 2005). Dopamine plays a major role in the reward system. Administration of L-Dopa in individuals with Parkinson's disease is often associated with an increase in libido. This is probably due to the involvement of dopamine in the reward system. Other inhibitory neurotransmitters are also implicated in hypersexual behavior. Serotonin is known for its inhibitory effects. A decrease in the rate of serotonin metabolite 5-HIAA in the cerebrospinal fluid is observed in impulsive sexual aggressors (Balthazart 2005).

Hypersexuality in elderly people and especially among those with neurocognitive disorders goes beyond disruption of neural circuits and neurotransmitters. There are also numerous psychological factors influen-

cing the advent of these symptoms. The need for intimacy and physical contact may be a form of compensation for the drop in self-esteem often present with the cognitive and functional decline found in the elderly (Robinson 2003, Wallace 2008, Derouesne 2009). People with major neurocognitive disorders may feel detached from others, unable to communicate with them, or to communicate their wants and needs. In this case, hypersexuality becomes a form of consistent communication. Miles and Parker called it "iatrogenic solitude" which is the loneliness felt by the elderly in institutions and nursing homes. This loneliness is often induced by the attitude of the nursing staff and the organizational structure that prevents any form of privacy in the context of the institution (Miles 1999). Death of the spouse can also be a source of solitude. Boredom can also be a factor in generating these behaviors.

The elderly person with a neurocognitive disorder may repeat a sexual activity because he has forgotten a recent one. This can be interpreted by the partner as hypersexuality (Robinson 2003). A disorder in the mechanism of facial recognition could also be a cause of hypersexuality. The elderly person might mistake a caregiver or a stranger for his partner.

Given the complexity of hypersexuality and its management and its many etiologies, we found it useful to present a clinical case of a patient who presented with symptoms of hypersexuality with suspected dementia (major neurocognitive disorder) and to discuss the diagnosis and especially the management.

## SUBJECTS AND METHODS

Data for the clinical case were based on the case of a patient who was referred to us for a psychosomatic evaluation for suspected dementia in our Psychosomatic Medicine department in CHU Mont-Godinne Yvoir, Belgium.

The patient was admitted to our unit from 19/02/2013 to 25/02/2013. Data collection was based on two psychiatric interviews made during the hospitalization, and a consultation in neurology made prior to the hospitalization. We also obtained the consent of the patient and her son.

For the literature review, we used the Pubmed database with the following keywords: hypersexuality, dementia. A total of 40 articles were selected for our review.

## RESULTS

Ms. Z.C. is a 69 year old widow who lives alone. She has two children, a son who lives nearby and takes care of the household tasks and errands, and a daughter who lives in France. She has well-regulated type 2 diabetes, a history of pulmonary embolism, right lombosciatalgia, osteosynthesis of the right hip, appendectomy,

tubal ligation, and cataract surgery. As for psychiatric history, the patient was hospitalized in a psychiatric hospital 30 years earlier for a major depressive episode. She does not smoke and does not drink alcohol or take drugs.

10 days prior to her hospitalization, the patient began to undress inappropriately in front of her son and was disinhibited verbally; she was openly discussing her sexual activities and her desire to have sex with her 25 year old neighbor. This event alarmed the patient's son who took her to the emergency room for assessment.

Upon admission, the patient was oriented in time and space. She reported mild memory loss that worried her. Her speech was fast, and had trouble concentrating and was uncooperative during the interview. She was singing and dancing the "St. Vitus Dance" and had incessant laughter. In addition, she was trying to invite nurses to engage in sexual relations with her. During her stay in the hospital, the patient had sexually disinhibited behavior. She masturbated in front of her roommate, and pursued the female nurses in the corridor trying to touch their genitals. Nurses also noted that the patient was putting random objects in her mouth during the day. She also had severe insomnia.

Clinical examination upon admission was unremarkable. Vital signs were normal. Pulmonary, cardiac, and abdominal examinations were normal. Neurological examination was unremarkable. The MMSE score was 20/27 (3 items not tested). Blood tests showed normal CRP, a normal blood count, normal renal and hepatic functions, normal electrolytes, normal calcium, normal cardiac markers and a normal urinalysis. The rest of the blood test showed a high TSH level at 6.36 uU / ml.

A brain CT scan performed on 02/09/2013 shows normal brain trophicity, frontal periventricular leukopathy, consistent with leukoaraiosis; no dilatation of the ventricular cavities, the midline structures were in place. No intracerebral hemorrhage or cerebral collection, no edema or recent ischemic injury.

A neurology consultation on the same day showed no argument for a neurological etiology to explain the symptoms of the patient.

On the pharmacological level, the patient was on aspirin 80mg/d, bisoprolol 5mg/d, l-thyroxine 25mcg/d, paroxetine 20mg/d, trazodone 100mg/d and lorazepam 2.5mg/d. It is important to note that the patient's son noticed that Ms. Z.C was omitting some doses in her treatment and might have been taking more lorazepam than prescribed by her primary physician.

She was monitored in our unit for a week with the introduction of risperidone 2mg and tapering down of lorazepam. Regarding symptoms of hypersexuality, the patient easily respected the instructions and the rules of our unit. She continued to masturbate in her room only, and stopped addressing nurses in an inappropriate manner. No other drug was necessary to control these symptoms.

The diagnosis of Kluver-Bucy syndrome in the context of probable delirium induced by benzodiazepine withdrawal was the most likely diagnosis given the clinical presentation. A possible hypomania was not eliminated. After a few days of hospitalization, Mrs. ZC was discharged after the resolution of her symptoms.

## DISCUSSION

The patient presented with partial Kluver-Bucy syndrome symptoms: hypersexuality, hyperphagia, akathisia and memory problems were the main symptoms.

The presentation is rather particular because it is in a context of a minor neurocognitive disorder and no brain damage could be objectified. The reversibility of the symptoms within days of hospitalization confirms the diagnosis of acute minor neurocognitive disorder.

It is interesting to discuss all treatment modalities in the medical literature regarding the management of hypersexuality.

Non-pharmacological interventions must be the first line choice in the case of hypersexuality in an elderly person with a neurocognitive disorder (Wallace 2008). These interventions involve the patient, his family, his partner, and the nursing staff if the patient is institutionalized. The goal is to promote an appropriate manifestation of sexual behavior instead of totally eradicating it.

The first step is to educate the patient and his family about the expression of sexuality in the elderly especially in the context of dementia. The aim is also to teach the spouse how to adapt to the situation and avoid the guilt that may cause or maintain sexual activity with a person with a neurocognitive disorder. It is essential to inform the partner about the impact of brain injury on sexuality, and the mechanisms underlying this abnormal behavior (Derouesné 2005).

The cognitive behavioral approach aims to reduce inappropriate sexual behavior and its impact on the environment. It includes education of the patient about social norms, and to encourage him to explore his intentions behind each behavior in order to change any cognitive distortion. Similarly, it involves the establishment of a therapeutic contract that could potentially control sexual impulses. It involves both the patient and his environment. Negative conditioning techniques may also be useful. This can be difficult for people with significant cognitive impairment (Derouesne 2009).

Another more subtle approach is the redirection of the patient or his attention to something else. For example, in institutions, when a patient enters the bed of another patient, it is recommended to simply redirect them to their room without any sanction since such behavior could arise from a search for intimacy without it being for sexual purposes. In many cases, simple techniques may be enough such as closing the curtains when a patient starts masturbating in his room. Switching from a female staff member to a male staff

member or staff turnover can alleviate stress caused by certain behaviors. Reducing sexual stimulation (magazines, television) is also important.

Distraction is an effective way to distract the patient from inappropriate behaviour. It is also useful to reduce boredom. This can be ensured by offering a snack, a drink, making conversation, exercising, walking etc.

Other techniques reported in the literature include restrictive clothing such as pants or overalls without zippers. Such techniques are controversial because of their ethical implications (Higgins 2005).

Although behavioral, psychological or environmental approaches are preferable, pharmacological treatment of hypersexuality is often the first choice due to the ease of administration, effectiveness and the lack of trained staff members (Harris 1998).

There are a limited number of studies on the pharmacotherapy of hypersexuality in the elderly. They are mainly case reports and small scale studies (Alkhalil 2004, Freymann 2005). Because of the age and vulnerability of these patients, we must keep in mind the risk/benefit ratio.

Selective Serotonin Reuptake inhibitors (SSRIs) are considered the first choice of treatment. They are known to decrease libido (Stewart 1997). They are generally well tolerated. The principal side effects are nausea, headache, and sexual dysfunction (Wallace 2008).

In second line come the typical or atypical antipsychotics such as haloperidol, risperidone and quetiapine, which have been proven to be effective in case reports (Ozkan 2008). However, antipsychotic drugs have significant side effects. In 2008, the FDA issued a warning regarding the use of these drugs in the elderly. Some epidemiological studies have shown that nearly 15,000 elderly people die each year due to the inappropriate use of antipsychotics. Medicare and Medicaid centers have taken steps to limit the use of these drugs in the elderly with a neurocognitive disorder (Center for Medicare Advocacy 2011).

Benzodiazepines are also an alternative for the treatment of hypersexuality, but these drugs, at low doses, can cause a reverse reaction by causing paradoxical excitation (Stewart 1997, Derouesne 2009).

Hormonal modulators such as estrogens, LHRH analogues and anti-androgens such as medroxyprogesterone were also studied in the treatment of hypersexuality in the elderly (Harris 1998). Their use is limited to third line due to their cost and their side effects. They work by reducing the levels of testosterone, which is responsible for sexual functioning (Cross et al. 2013).

Estrogens may have cardiovascular side effects, including thromboembolism, fluid retention, gastrointestinal effects and gynecomastia. LHRH analogues exist only in the form of injection. They may cause bone pain in approximately 12-13% of patients, and significant hot flushes in 75-90% of patients (Cross et al. 2013).

It is important to note that medications that stimulate arousal, particularly those with noradrenergic or dopaminergic action should be avoided (Derouesne 2009).

## CONCLUSION

Inappropriate sexual behaviors in elderly people with neurocognitive disorder are rare. They seldom have a purely sexual purpose and are rarely due to a real increase in libido. Treatment is mainly non-pharmacologic. Education of the patient, his partner and his caregivers is essential. Pharmacotherapy is sometimes necessary. It is reserved as a last resort because of the serious side effects of the drugs used.

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