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CASE REPORT

Social communication disorder and behavioural addiction: Case report and clinical implications

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ABSTRACT

Background: Social communication disorder (SCD) is a neurodevelopmental disorder that includes communication difficulties. Literature linking SCD and addictions is scarce, and there are only a few case reports regarding the co-occurrence of addiction and autism disorder spectrum, and only one of them addressed behavioural addictions. *Case presentation:* We report MC's case, who displayed an SCD and sexual addiction (SA). Clinical and neuropsychological evaluations suggested an alteration of social cognition, especially of affective theory of mind. This article also presents the adaptation made of the usual treatment. *Discussion:* This case report illustrates the importance of social cognition abilities in the development and maintenance of behavioural addictions, and specifically SA. It also highlights the possible comorbidity of these two disorders and the possibility to work on social cognition as an alternate therapy in the treatment of behavioural addictions. *Conclusions:* The co-occurrence of SCD and a behavioural addiction triggered clinical adaptations and implications that may affect a patient's treatment presenting one of these disorders.

KEYWORDS

social communication disorder, behavioural addiction, case report, sexual addiction, addictive disorder, neuropsychology

BACKGROUND

The Diagnostic and Statistical Manual of mental disorders (DSM) newly included social communication disorder (SCD) in its fifth version (American Psychiatry Association, 2013). SCD concerns all patients presenting difficulties in using and understanding verbal and non-verbal communication that alter their daily life, without the presence of a disability or another mental disorder. For example, patients with SCD may experience difficulties using non-literal communication (irony, jokes) or respecting conversation codes. Restrained interests and repetitive behaviours cannot be present; otherwise, difficulties may be classified under autism spectrum disorder (ASD) (Swineford, Thurm, Baird, Wetherby, & Swedo, 2014). ASD and SCD are both neurodevelopmental disorders that include communication difficulties.

It appears that ASD and addiction can co-occur (10.8% of the prevalence of internet addiction in an ASD group, So et al., 2017), impacting the treatment. Indeed, as shown by the case report of van Wijngaarden-Cremers and van der Gaag (2015), a deficit in understanding social situations can lead patients to dangerous situations (sexual abuse and addiction to substances in this particular case report) because they attributed good intentions to others. Moreover, the usual treatment can be problematic because of the tendency of patients to interpret everything literally. However, few case reports linking ASD or SCD to addictions

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have been published. To our knowledge, only one of them was about a behavioural addiction (two cases of high functioning autism patients displaying a history of internet gaming addiction coupled with a gambling disorder or excessive sexual activity). The authors did not report any standardized measures (Wong, 2018).

In our case report, we present a co-occurrence between sexual addiction (SA) and SCD. SA is a disorder that still needs further research to be included in the addiction sections of international classifications (Kraus et al., 2018). Nevertheless, compulsive sexual disorder has been added in the 11th of International Classification of Diseases (ICD-11) as an impulse control disorder (see Grubbs et al., 2020, for a history of the evolution of this concept). This diagnostic involves sexual activities being the main interest in the disinvestment of other spheres, a loss of control over the behaviour, and the cessation of sexual behaviour being impossible despite negative consequences and a lack of satisfaction (World Health Organization, 2018).

CASE PRESENTATION

Presentation of the patient

The patient gave her written consent for the description of her case. MC is a single 27-year-old woman who met several practitioners during her childhood for motor difficulties and struggles regarding novelty, for which neuroimaging did not show any alterations. After two failures to obtain her high school diploma and complaints regarding spatial orientation and relations to peers, new assessments were made. A genetic exploration highlighted a micro-deletion non-indexed in databases, the pathogenicity of which is uncertain. At the same time, neuropsychological evaluation excluded intellectual disability and showed difficulties in an advanced theory of mind task (the Reading the Mind in the Eyes Test, Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). Finally, at the age of 23, MC was diagnosed with SCD rather than ASD by a specialized centre. Indeed, clinicians judged, based on her mother's information and several assessments, that stereotypies and restrained interests were absent from her developmental history.

After failing to obtain her high school diploma, MC began an adapted training to work in a resource centre. She is currently living with her mother. As a teenager, MC had preoccupations regarding sexuality and consulted erotic chat services in parallel with the difficulties presented above. At the beginning of her adulthood, she was registered on several meeting apps. When her mother discovered that MC was displaying a compulsive sexual behaviour, MC had had several sexual partners. She was willing to practice hardcore sex and to be filmed and posted on the internet. When discovering this situation, her mother confiscated her access to the internet. At this time, MC stopped her training.

Given the compulsive sexual behaviour and loss of control displayed byher daughter, MC was brought by her mother to our addictology department to explore an SA. Her complaints included fear of going outside because of what she could do, for example meeting new men via applications, or whom she could meet and difficulty distinguishing between men with good or bad intentions. Moreover, MC considerably doubted her ability to understand social relationships, and she addressed several letters to clinicians in this perspective.

Diagnostic assessment

As per the procedure in our department for all patients seeking treatment for a potential behavioural addiction, MC met the research team for a complete clinical evaluation in the framework of the EVALADD cohort (NCT01248767) (see Table 1 for results and Fig. 1 for the timeline).

The patient met the diagnostic criteria for SA. Moreover, the clinical assessment highlighted (i) the presence of an attention-deficit/hyperactivity disorder (ADHD), (ii) a high level of impulsivity, and (iii) a lack of self-esteem. Nevertheless, considering the clinical characteristics observed as the high level of impulsivity and difficulties encountered with social relationships, we chose to propose a neuropsychological assessment to objectify the patient's subjective information (see Table 2 for results).

This neuropsychological assessment showed that cognitive functioning was globally preserved (speed processing, verbal quotient, visuospatial abilities, and inhibition). Attention assessment showed a meticulous profile that can be linked with the patient's need to have precise answers regarding global social situations. This result also casts doubt on the diagnosis of ADHD identified with self-reports. Furthermore, the evaluation of social cognition did not show a deficit on every test, and MC succeeded in several tasks (emotion recognition, emotional fluencies, and cognitive theory of mind (i.e. attribution of mental states that are not emotions, such as beliefs)) (Shamay-Tsoory & Aharon-Peretz, 2007). Nevertheless, she failed the Eyes Test, the Faux Pas Task, and the LEAS (Levels of Emotional Awareness Scale). The Eyes Test is an advanced task for assessing the theory of mind because only eyes are presented, and the related emotions are not basic ones (unlike the emotion recognition task, which was successfully completed by MC). MC failed to recognize a faux pas situation during the test (which made her lose 6 points), and she also did not correctly answer 3 questions about the intentionality of the character and 2 questions regarding emotion attribution. Finally, during the LEAS, MC had difficulties answering questions about her feelings and could not answer questions about others' feelings. These results showed an alteration of the theory of mind, specifically for the emotional component. These outcomes specified the difficulties verbalized by MC in understanding the intentions of others.

Therapeutic intervention

MC went to addiction consultations once a month to every two months for the management of her problematic sexual behaviours (see Fig. 1 for the timeline). The patient also had two sexology consultations in our department. Moreover, we decided to deviate from the usual treatment, a cognitive

Table 1. Clinical evaluation at the first visit

Pathology explored	Measures	Results		
		Positive diagnosis	**Period**	**Before or after the beginning of addiction**
Psychopathological characteristics				
Axis 1 Psychiatric disorders	Mini-International Neuropsychiatric Interview (MINI) version 5.0 adapted for DSM-5 criteria Lecrubier et al. (1997)	Major depressive episode	Current	After
		Suicidal risk	Current	After (in association with the addiction)
		Social phobia	Current	Before
		Post-traumatic stress disorder	Current	Before
Attention-Deficit/Hyperactivity Disorder (ADHD)	Wender Utah Rating Scale for Attention-Deficit/Hyperactivity Disorder in Adults (WURS-C) (Ward, Wender, & Reimherr, 1993)	86/100 (cut-off for the diagnostic: score ≥46)		
	Adult ADHD Self-Report Scale (ASRS-1.1) (Kessler et al., 2005)	5/6 (cut-off for the diagnostic is a score ≥4) Attention deficit: 33/36 Hyperactivity: 27/36		
Personality characteristics				
Attachment style	Relationship Scales Questionnaire (RS-Q) (Griffin & Bartholomew, 1994)	Secure: 2.6/5 Fearful: 2.4/5 Preoccupied: 3.4/5 Dismissing: 3.4/5		
Impulsivity	Impulsive Behavior Scale (UPPS-P) (Whiteside & Lynam, 2001)	Negative urgency: 14/16 Positive urgency: 10/16 Lack of premeditation: 11/16 Lack of perseverance: 8/16 Sensation seeking: 15/16		
Personality	Temperament and Character Inventory (TCI-125) (Cloninger, Svrakic, & Przybeck, 1993)	*Temperaments*: Novelty seeking: 45/100 Harm avoidance: 85/100 Reward dependence: 80/100 Persistence: 80/100 *Characters*: Self-directedness: 36/100 Cooperativeness: 60/100 Self-transcendence: 33.3/100		
Self-esteem	Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 2015)	19/40 (low)		
Quality of life	Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985)	17/35 (slightly below the mean)		
Sexual addiction characteristics	Face-to-face interview exploring the diagnosis criteria proposed by Carnes and following the structure of the NODS (National Opinion Research Center DSM Screen for Gambling Problems) (Carnes, 2001; Carnes, Hopkins, & Green, 2014)	Exploration of the period before the cessation of the problematic behaviour: score = 7/10 (cut-off score ≥3)		
	Goodman criteria for Sexual Addiction (Goodman, 2001)	8/9		
	Sexual Addiction Screening Test-Revised (SAST-R) (Carnes, Green, & Carnes, 2010)	Core item scale: **14**/20 (cut-off is a score ≥6) Internet items: **4**/6 (cut-off is a score ≥3) Men's items: **2**/6 (cut-off is a score ≥2) Women's items: **2**/6 (three *item missing*, the cut-off is a score ≥2) Homosexuality items: **5**/6 (one item missing, cut-off is a score ≥3)		

(continued)

Table 1. Continued

Pathology explored	Measures	Results
		Preoccupation: **2**/4 (cut-off is score ≥2) Loss of control: **4**/4 (cut-off is score ≥2) Relationship disturbance: **4**/4 (cut-off is score ≥2) Affect disturbance: **3**/5 (cut-off is score ≥2)
	Factors triggering problematic behaviour	Difficulties in relationships: 10/10 Feeling positive emotions: 0/10 Feeling negative emotions: 9/10 Financial problems: 0/10 Cash inflow: 0/10 Context (place, people): 7/10 Publicity: 8/10 Substance use: 0/10

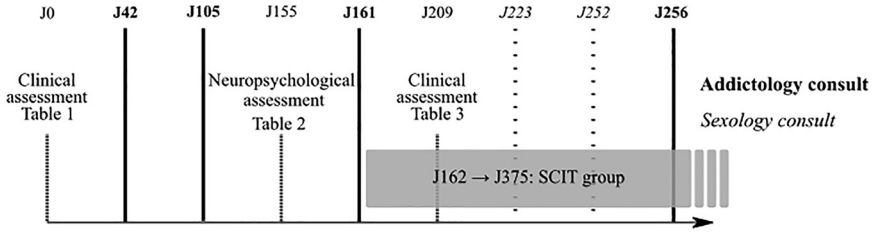

Fig. 1. Timeline of the treatment of the patient

behavioural therapy (CBT) group. We created 10 years ago this CBT program dedicated to outpatients with a sex addiction. This program consists of 10 weekly sessions lasting about 2 hours each, and involves 2 therapists for 10 patients. It aims at training to train patients throughout CBT strategies to regain control over sex behaviour. It combines motivational interviewing, psychoeducation regarding sex addiction and adaptive sexuality, stimulus control and response prevention strategies, cognitive restructuring, and relapse prevention techniques. However, the patient was included in a social cognition and interaction training (SCIT, Combs et al., 2009) group. This therapeutic group, initially created for patients with schizophrenic disorders, consists of 24 weekly sessions of 1 hour 30 minutes and is focused on emotion perception, attribution style, and theory of mind. Its objective is to improve social cognition abilities and decrease social-cognitive biases in order to improve social functioning (Roberts et al., 2014). We chose to include her in this group, composed of patients with schizophrenia who also display alterations in social cognition, because, even if it took the appearance of SA, the observed problematic sexual behaviour was also, in our opinion, the reflection of social cognitive difficulties. This type of group does not require strong empathy skills, reading social cues, or interacting efficiently, as is the case for CBT groups, and it maintains the advantage of a collective format and an opportunity to practise social skills. No medication was added to the treatment.

Follow-up and outcomes

After six months of treatment, MC did not show SA's criteria (see Table 3 for the follow-up clinical evaluation). Nevertheless, MC was still questioning social norms and tried to understand the implicit rules of social relationships. The patient also felt that the situation was a dead end. Regarding the SCIT group, her mother, who took the role of practice partner (i.e. the identified person who works with the patient during the week on SCIT exercises), related that the group was an excellent socialisation exercise for her daughter. She also noticed that MC was less in her bubble and more aware of the difficulties that other patients could meet. This improvement seems to reflect social cognitive abilities enhancement thanks to the group situation and exercises proposed in the SCIT group.

Patient perspective

After her treatment, MC noticed an easier processing of emotions, as well as a better understanding of certain social norms. Nevertheless, implicit information was still complex for her to understand.

DISCUSSION

This case report shows the importance of taking into account social cognition in treating patients with behavioural addictions and, more specifically, SA. Indeed, in MC's case, social cognitive alterations in the framework of her SCD led her to misunderstand certain social situations and accept several risky sexual situations without protecting herself. Nevertheless, our patient also displayed clinical signs of addiction, such as craving and the urge to perform the behaviour, which seemed to indicate that the sexual situations were not only abuses of her vulnerability. For the

Table 2. Neurocognitive assessment

Cognitive domain explored	Measures	Results	
Processing speed (WAIS-4) (Wechsler, 2011)	Code Symbols	67, NS = 8 30, NS = 8	Index of processing speed: 89, percentile 23
Premorbid intelligence	French version of the National Adult Reading Test (fNART) (Mackinnon & Mulligan, 2005)	23/40, z = 103, verbal quotient = 102	
Visuospatial abilities	Taylor Complex Figure (Taylor, 1959)	36/36, type 1	
	Visual Object and Space Perception Battery (VOSP) (Warrington & James, 1991)	*Object perception* Incomplete letters: 20/20 Silhouettes: 21/30 Object decision: 12/20 (cut-off = 14) Progressive silhouettes: 14/20 (cut-off = 15) *Spatial perception* Dot counting: 10/10 Position discrimination: 20/20 Number location: 10/10 Cube analysis tests: 10/10	
	PEGV (*Protocole Montréal Toulouse d'Evaluation des Gnosies visuelles*, a protocol that permits the evaluation of visual gnosis) (Agniel et al., 1992)	20/20	
Flexibility	Trail Making Test (TMT) (Lezak, Howieson, Loring, Hannay, & Fischer, 2004)	A: 42 s, B: 94 s; delta = 52 s, percentile 5–10	
Inhibition	Stroop test (Godefroy & GREFEX, 2008)	Denomination: 61 s, percentile 25 Read: 45 s, percentile 25 Interference: 89 s, percentile 50 Delta: 28, percentile 50–75	
Visual selective attention	D2 test (Zimmermann & Fimm, 2002)	Number of items processed: GZ: 367, **Q1e*** Number of error = 1, percentage of error F% = 0.3, **Q1e** Number of correct d^2 crossed, KL = 155, Q1	Meticulous profile
Social cognition	Facial Emotion Recognition (mini-SEA) (Ehrlé, Henry, Pesa, & Bakchine, 2011)	31/35 (loses 1 point for fear, disgust, neutral and anger), z = −0.3	
	Faces Test (Etchepare et al., 2014)	Denomination without clues: 4/10 simple emotions, 2/10 complex ones. Total: 6/20: z= −1.1 Fixed choice: 8/10 on simple emotions, 10/10 on complex ones	
	Eyes Test (Baron-Cohen et al., 2001)	16/36: z = **−3.25** *The patient always chose the hostile item when proposed.*	
	Emotional fluences	18 words *(completed right after Faces Test; the patient was cued)*	
	False beliefs (TOM-15) (Desgranges et al., 2012)	1st order: 8/8 FC1, 16 min 2nd order 5/7, 6 min Control questions: 15/15, 2 minutes 19 s	Total = 13/15, z = −1.1 *The patient relied on the logic of the story and intellectualized answers, going against her spontaneous choice.*

(continued)

Table 2. Continued

Cognitive domain explored	Measures	Results
	Attribution intention (Brunet, Sarfati, & Hardy-Baylé, 2003)	12 good answers, 1 absurd and 1 possible Control questions: 27/28
	Faux pas (theory of mind, mini SEA) (Bertoux et al., 2012)	**19**/30 Detection of *faux pas* z= **−1.55** 20/20 non-faux pas stories 10/10 control questions
	LEAS (Levels of Emotional Awareness Scale) (Bydlowski, Corcos, Paterniti, Guilbaud, & Jeammet, 2002)	Points for feelings of the patient: 37, z = **−3.45** *No answer was given regarding the others' feelings*
	Alexithymia (TAS-20) (Loas, Fremaux, & Marchand, 1995)	78 *(cut-off is a score ≥ 56)*

*Q1e = Extreme first quartile.

Table 3. Clinical evaluation after 6 months of treatment

Pathology explored	Tool used	Results	Comparison with the first assessment
Psychopathological characteristics			
Attention-Deficit/Hyperactivity Disorder	Adult ADHD Self-Report Scale (ASRS-1.1)	*4 items with missing data on the six first items* Attention deficit: 18/32 *(4 missing data)* Hyperactivity: 25/36	Diminution on both scales, especially on the attention deficit scale
Personality characteristics			
Attachment style	Relationship Scales Questionnaire (RS-Q)	Secure: 2.4/5 Fearful: NK/5 Preoccupied: NK/5 Dismissing: NK/5	Slight diminution on the secure scale
Impulsivity	Impulsive Behavior Scale (UPPS-P)	Negative urgency: 12/16 Positive urgency: 10/16 Lack of premedication: NK/16 Lack of perseveration: 8/16 Sensation seeking: 8/16	Diminution of scales regarding negative urgency and sensation seeking
Personality	Temperament and Character Inventory (TCI-125)	*Characters*: Self-directedness: NK/100 Cooperativeness: NK100 Self-transcendence: NK/100	
Self-esteem	Rosenberg Self-Esteem Scale (RSES)	18/40 (low)	Decrease of one point, no improvement in self-esteem
Quality of life	Satisfaction with Life Scale (SWLS)	*One missing item* 12/28 (slightly below the mean)	No significant change of satisfaction with life
Sexual addiction characteristics	Face-to-face interview exploring the diagnosis criteria proposed by Carnes and following the structure of the NODS (National Opinion Research Center DSM Screen for Gambling Problems)	Exploration of the actual period: score = 1/10 (cut-off score ≥3)	Absence of sexual addiction diagnostic
	Goodman criteria: Sexual Addiction Screening Test-Revised (SAST-R)	Non-validated Core item scale:**10**/20 (cut-off is a score ≥6) Internet items: 1/6 (one item missing, cut-off is a score ≥3) Men's items: 0/6 (cut-off is a score ≥2) Women's items: 0/6 (one missing item, cut-off is a score ≥2)	Improvement of addictive symptoms

(continued)

Table 3. Continued

Pathology explored	Tool used	Results	Comparison with the first assessment
		Homosexual items: 0/6 (two items missing, cut-off is a score ≥2) Preoccupation: 1/4 (cut-off is score ≥2) Loss of control: **4**/4 (cut-off is score ≥2) Relationship disturbance:1/4 (two items missing, cut-off is score ≥2) Affect disturbance: **2**/5(one item missing, cut-off is score ≥2)	
	Factors triggering problematic behaviour	Difficulties in relationships: 0/10 Feeling positive emotions: 0/10 Feeling negative emotions: 0/10 Financial problems: 0/10 Cash inflow: 0/10 Context (place, people): 0/10 Publicity: 0/10 Substances use: 0/10	No additional factor that triggers the problematic behaviour

specific case of MC, the SCD may have favoured the appearance and maintenance of SA. Moreover, as the standard treatment for SA (CBT group) could not be proposed to MC, the therapeutic strategy was to work on social cognition. This upstream focus permitted us to work on social abilities, which led her to better understand other's intentions (thanks, for example, to the theory of mind and emotion perception exercises). This helped her protect herself, thanks to a better understanding of situations that can be dangerous.

This case also suggests commune alterations between SCD and addiction. Indeed, MC's neuropsychological assessment identified an alteration of affective theory of mind, which relies on the ventromedial prefrontal cortex (Shamay-Tsoory & Aharon-Peretz, 2007). This part of the prefrontal cortex has also been linked to hot executive functioning and decision-making in addiction models (Noel, Brevers, & Bechara, 2013). Therefore, it seems that common neurobiological alterations could explain the comorbidity observed in this case report. Thus, it seems essential to screen for social cognitive disabilities in patients who present addiction and complain of social difficulties. Indeed, even if there is no formal deficit in social communication, therapy focused on the remediation of social cognition could be a therapeutic alternative that can also improve addictive symptoms.

CONCLUSION

This case report highlights the importance of social cognition abilities in the initiation, development, and maintenance of addictive behaviours. It also shows the link between addiction and social cognition alterations and the importance of assessing patients' social cognition with addictions and clinical signs of addiction for patients presenting alterations of social cognition.

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