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Review of the literature

The effects of oxytocin on social cognition in borderline personality disorder

Effets de l'ocytocine sur la cognition sociale dans le trouble de personnalité borderline

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ABSTRACT

Introduction. – Deficits in social cognition and interpersonal difficulties are key features in borderline personality disorder. Social cognition refers to the function of perceiving and adequately dealing with social signals, leading to the establishment and maintenance of healthy and positive social relationships. Evidence suggests that oxytocin (OT) may improve social cognition and human social behavior. Recently, several studies have highlighted the beneficial effects of oxytocin in several psychiatric conditions involving social cognition deficits such as schizophrenia, autism or social phobia. However, despite growing interest, the effects of oxytocin in patients with borderline personality disorder are far from being clearly demonstrated.

Objective. – The objective of this work was to review and discuss studies investigating the interest of oxytocin in alleviating social cognition deficits in patients with borderline personality disorder (recognition of emotion, trust and cooperation, affective and cognitive empathy, emotional expression and social problem-solving).

Method. – A systematic review of the literature was conducted up to September 31, 2016 on the Pubmed, Science direct, Medline and Scopus databases using "borderline personality disorder" and "oxytocin" as keywords. To be included, studies were to include patients with borderline personality disorder; to investigate social cognition and to investigate the effect of oxytocin on social cognition in patients with TPB.

Results. – The initial search yielded 52 articles. Among them, 11 studies were selected according to the PRISMA criteria. The effect of oxytocin on social cognition in patients with borderline personality disorder was mainly investigated in relation to recognition of emotions and trust and cooperation. We did not find any studies investigating the effect of oxytocin on affective and cognitive empathy, emotional expression or social problem-solving abilities. In patients with borderline personality disorder, oxytocin had a beneficial impact on recognition and discrimination of emotions and on hypervigilance towards social threats. However, oxytocin could hinder trust and cooperation.

Conclusions. – These data lead us to consider oxytocin as a treatment for emotion recognition deficit and hypervigilance towards social threats in borderline personality disorder. A beneficial effect of oxytocin of this nature may be obtained only in patients without deficits in trust and cooperation because of a risk of aggravating relational instability. There was no current evidence for the interest of oxytocin in enhancing affective and cognitive empathy in borderline personality disorder. Further studies are needed to evaluate the clinical interest of combining oxytocin with psychotherapeutic approaches such as dialectical behavioral therapy or mentalisation-based treatment.

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RÉSUMÉ

Objectif. – L'objectif de cette revue est d'évaluer l'intérêt de l'ocytocine sur les différentes dimensions de la cognition sociale qui sont altérées dans le trouble de la personnalité *borderline* : la reconnaissance des émotions, l'empathie affective, l'expression des émotions, l'empathie cognitive, la résolution des problèmes sociaux et la confiance et la coopération.
Méthode. – Revue systématique de la littérature des banques de données informatisées Pubmed, Science direct, Medline et Scopus avec les mots clés : « borderline personality disorder » et « oxytocin ».
Résultats. – Parmi les 52 études retrouvées dans la littérature, 11 études ont été retenues. Ces études montrent que l'ocytocine est efficace sur le déficit de reconnaissance des émotions et sur l'hypervigilance à la menace sociale chez les patients présentant un trouble de la personnalité *borderline*. Cependant, l'ocytocine peut également aggraver la difficulté à faire confiance et à coopérer avec un partenaire social. Nous n'avons pas retrouvé d'études sur l'expression des émotions, sur l'empathie affective et cognitive et sur la résolution des problèmes sociaux.
Conclusions. – Ces données nous amènent à envisager l'utilisation d'ocytocine pour traiter le déficit dans la reconnaissance des émotions et l'hypervigilance à la menace sociale chez les patients avec un trouble de la personnalité *borderline*. Cependant, l'ocytocine ne devrait pas être administrée aux patients avec un déficit dans la confiance et la coopération au risque d'aggraver leur instabilité relationnelle.

Mots clés :
Trouble de la personnalité *borderline*
Ocytocine

1. Introduction

Borderline personality disorder is a prominent clinical disorder with poor prognosis, characterized by high mortality, in particular by suicide (up to 10% of patients die by suicide), and frequent hospitalisations [1]. It affects 1% to 6% of the non-clinical population, 10% of the psychiatric population, and 20% of patients hospitalised in a psychiatric facility [2].

Since it was first described by Stern in 1938, instability in interpersonal relationships appears as a baseline characteristic of borderline personality disorder. Among patients with BDP emotional lability, impulsiveness, relational difficulties and disturbances in identity and cognition are frequently observed [3]. In its diagnostic criteria, the recent version of the DSM (DSM-5) also includes efforts deployed to avoid abandonment, the repetition of self-harm behaviours, the chronic feeling of emptiness and difficulty controlling anger [4]. These criteria can be conceptualised in three fundamental dimensions corresponding to instability in interpersonal relationships, impulsiveness and affective dysregulation [5]. Among subjects exhibiting borderline personality disorder, social situations appear as powerful triggers for emotional excitation and affective instability [6] leading to impulsive adaptative behaviours [7]. In addition to the theoretically central role of disordered interpersonal relations in borderline personality disorder, sufferers describe altered interpersonal functioning as being significantly problematic [8].

Whatever the international classification used, deficits in the field of social cognition and in interpersonal relations are central to diagnosis of borderline personality disorder. The phrase "social cognition" refers to the ability to perceive and adequately process the social signals that enable quality social relationships to be established and maintained. The difficulties observed in the different areas of social cognition in borderline personality disorder have been classified in six broad domains in this area of research: recognition of emotions, affective empathy, the expression of emotions, cognitive empathy, social problem-solving, and trust and cooperation.

Concerning performances in the recognition of emotions, certain studies demonstrate a deficit in the recognition of negative emotions in borderline personality disorder [9,14], while others conclude to excessive recognition of negative emotions such as fear [10] or anger [9,10]. Regarding affective empathy, there are studies that report either a deficit corresponding to difficulty feeling the emotions of others [11,12], or else excessive contagion of emotions [13]. The expression of emotion in these subjects could be more difficult to read [4] with a tendency to more readily reflect negative facial expressions [15]. In addition to this, several authors have described a deficit in cognitive empathy among borderline personality disorder patients [11–13,16], or more negative assessments of the other person [8]. It may be that borderline personality disorder patients use more passive [17] and less relevant [18] means to solve social issues. Finally, studies assessing trust and cooperation among these patients report deficits in these two areas [19].

Today, psychotherapy is the recommended first-line treatment in borderline personality disorder [20]. Certain pharmacological treatments targeting symptoms are also classically used, but with fairly small effect on interpersonal instability and the overall severity of borderline personality disorder [21]. This lack of efficacy often results in the excessive use of medication [22] despite inadequate proof of its efficacy [23]. This information led us to consider new, specific therapeutic approaches so as to improve care provision in borderline personality disorder, and interpersonal difficulties appear as a worthwhile target. Interpersonal symptoms are indeed slow to recede, with 15 to 20% of individuals with borderline personality disorder presenting these symptoms at outset failing to improve after 10 years' follow-up [24], which has long-term consequences on social functioning [25]. Disordered interpersonal functioning thus has an important role in the prognosis of borderline personality disorder.

It is recognised today that oxytocin (OT) produces effects on social cognition and on human social behaviours. Oxytocin is a neuropeptide synthesised in the magnocellular neurons of the paraventricular and supraoptic nucleus of the hypothalamus. This neuropeptide is then transported to the posterior pituitary gland where it is released [26]. Several studies suggest that there are oxytocin receptors in the brain areas that are closely linked to social behaviours, such as the limbic structures [27]. Oxytocin, often known as the "social hormone", is at present generating considerable enthusiasm for its potential role in the treatment of certain psychiatric disorders [28], and in particular, those implicating disorders in social cognition such as autism, schizophrenia and social anxiety, producing results that are often favourable [29]. In this sense, borderline personality disorder could provide an interesting target. Bertsch et al. compared oxytocin levels in female patients with borderline personality disorder with those of healthy subjects. In the clinical group, they found plasma concentrations of oxytocin that were below those in the healthy subjects [30]. Likewise, lower levels of plasma oxytocin have been found in

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