

## MOBIUS SYNDROME AND OBSESSIVE COMPULSIVE DISORDER: A CASE REPORT

Denis Jacques<sup>1,2</sup>, Michel Ossemann<sup>3,4</sup>, Jean-Marc Timmermans<sup>5</sup>,  
Nicolas Zdanowicz<sup>1,2</sup> & Thomas Dubois<sup>1</sup>

<sup>1</sup>Université Catholique de Louvain, Psychosomatics Unit, Mont-Godinne University Hospital, Yvoir, Belgium

<sup>2</sup>Institut de Recherche Santé et Société, IRSS, Brussels, Belgium

<sup>3</sup>Université Catholique de Louvain, Neurologic Unit, CHU Ucl Namur Godinne Hospital, Yvoir, Belgium

<sup>4</sup>Institute of Neuro Sciences, IoNS, Brussels Belgium

<sup>5</sup>Université de Mons, Clinical Orthopedagogy Unit, Mons, Belgium

### SUMMARY

**Background:** Mobius syndrome is characterized by a bilateral congenital paralysis of the facial and abducens nerves which leaves the subject with an expressionless "mask-like" face.

**Subjects and methods:** Based on a literature review and a case discussion of an adult patient with Mobius syndrome and obsessive-compulsive disorder, initially undiagnosed and confused with a psychotic disorder, we will discuss the influence of Mobius syndrome in psychiatric evaluations.

**Results:** The lack of facial expressiveness and non-verbal emotional interactions may influence psychiatric evaluations and result in misdiagnosis and the inappropriate prescribing of antipsychotics. In the case analysis, we also observed other associated malformations such as renal atrophy, a bicuspid aortic valve and mitral valve prolapse.

**Conclusion:** We feel that educating the patient about the communicative consequences of impaired facial expressions and facial interactions is a necessary prerequisite for any psychiatric or psychological evaluation in subjects with Mobius syndrome. We also recommend using caution when prescribing antipsychotics in patients with Mobius syndrome given the motor side effects secondary to a potentially pre-existing hypotonia.

**Key words:** Mobius syndrome - OCD-renal atrophy-bicuspid aortic-mitral valve prolapse-BCT-delusions-drug induced dystonia

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### INTRODUCTION

Mobius syndrome (described by the neuropsychiatrist Paul Julius Möbius 1853-1907), also called congenital facial diplegia or congenital oculo-facial paralysis, is a rare non-progressive congenital neurological disorder that is characterized by a facial diplegia, partial or complete by damage of facial nerve (VII) frequently associated with others cranial nerves damages, particularly the abducens nerve (VI) who innervates the right lateral muscle which controls lateral eye movement.

The estimated prevalence of this syndrome is 1 out of 10,000 to 80,000 live births. It is caused by the defective development, in the hindbrain, of the cranial nerve nuclei (nerves VI and VII). The syndrome is multifactorial with genetics and environmental causes. The observed modalities of genetical transmission are autosomal dominant inheritance or recessive and also X-linked for a subgroup of affected patients (McKay et al. 2016).

Concerning environmental causes, it was observed: impairment of the blood supply to the cranial nuclei or infectious damages in the second month of pregnancy as well as taking certain medications or drugs (such as thalidomide, misoprostol, alcohol or cocaine).

The syndrome is also associated with muscle hypotonia and several orthopaedic malformations such as clubfoot, scoliosis, limb and upper extremity malformations (McClure et al. 2017).

In the eyes, we find a limitation of ocular abduction in all cases. In addition, we also often find esotropia, epicanthus and entropion, and sometimes exotropia and hypertropia (Borbolla et al. 2014).

Poland syndrome (unilateral aplasia of the pectoralis major muscle associated with mammary or nipple abnormalities) is also present in some cases (McClure et al. 2017).

In terms of orthodontics, reduced temporomandibular joint movement is observed as well as micrognathism or excessive maxillary growth, which is undoubtedly associated with lip muscle coaptation problems or tongue malformations (Magnifico et al. 2018).

Last, there are also reported cases of obesity and early puberty associated with Mobius syndrome (De Silva et al. 2018).

It can be difficult to diagnose Mobius syndrome. At birth, suckling, swallowing, feeding and breathing problems can be warning signs; however, it is not always easy to immediately associate these symptoms with the syndrome given that it is so rare. The lack of facial expressiveness and the various associated malformations leads to the diagnosis at an early age. Most authors recommend early screening and a multidisciplinary assessment (McKay et al. 2016), along with a paediatric examination, in the fields of plastic surgery, neurology, otorhinolaryngology, orthopaedics, ophthalmology and orthodontics (Magnifico et al. 2018). It is essential that

the child and family have medical support during the developmental course and the various surgeries, always using a multidisciplinary approach.

Although the syndrome is not progressive, it obviously has a major emotional impact on the patient and their family.

Using a case report of an adult with Mobius syndrome, we discuss the syndrome's psychological effects on the individual's development and also show how the characteristics of the syndrome can make it difficult to interpret and detect possible psychiatric symptoms.

## SUBJECTS AND METHODS

Based on a literature review and a case discussion of an adult patient with Mobius syndrome and obsessive-compulsive disorder, initially undiagnosed and confused with a psychotic disorder, we will discuss the influence of Mobius syndrome in psychiatric evaluations.

Patient data was collected during 40 psychiatric visits between May 2011 and December 2018. The consultations were conducted at the Catholic University of Louvain, CHU Ucl Namur, Psychosomatic Dpt, avenue Dr G. Therasse n°1, 5530 Yvoir, Belgium.

The literature review was conducted using the databases, PsycInfo, and Pubmed with the following keywords: mobius syndrome and psychiatry

A total of 39 articles were found in the search and 18 were selected for their clinical relevance.

## RESULTS

The patient was 31 years old at the time of his first consultation. He has Mobius syndrome. We note the following in his medical history: hypothyroidism, hypercholesterolemia, bicuspid aortic valve, and mitral valve prolapse. With regards to the surgical history, the patient underwent a right nephrectomy for renal atrophy, two clubfoot surgeries, jaw surgery and an appendectomy.

Over the past five years, the patient has consulted 8 different psychiatrists without maintaining continuity of care. The following antipsychotic treatments were prescribed and discontinued due to intolerance with vomiting and especially drug induced dystonia: amisulpride, risperidone, haloperidol, pimozide, aripiprazole with the introduction each time of procyclidine in order to limit the drug induced dystonias. In the patient's last psychiatric follow-up file, we find the possibility of an unspecified psychotic disorder with episodes of hallucination and interpretative and paranoid symptoms.

The patient's current drug therapy consists of quetiapine 25 mg, paroxetine 20 mg and prazepam 30 mg.

The patient lives with his parents, is not employed, and is officially recognized as being disabled which allows him to receive disability benefits.

Clinically, the patient is calm. He is coherent when he speaks with a normal spatial-temporal orientation. His mood is described as sad with daily anxiety that comes in peaks (panic attacks) and which force the patient to lie down and stay in bed. His sleep is described as reduced to 4 hours with difficulty falling asleep and waking up with nightmares. He says he has a decreased appetite. The patient says that he has gained 20 kilos over a period of two years after taking the various antipsychotic drugs described above. The patient does not drink any alcohol, nor does he smoke cigarettes or cannabis. He also does not consume nicotine in any way, nor does he use heroin, cocaine or any other synthetic drugs.

The patient explains that he made an appointment following a cardiology consultation during which he was advised to try to start seeing a psychiatrist again for follow-up given the intensity of the panic attacks. Right at the outset, the patient says that he has been disappointed so far by the psychiatric follow-ups and emphasized that he feels misunderstood. He also mentions that the drugs he has been given have had more cons than pros.

The patient says that he sees horrible things throughout the day without at first specifying the content of his "hallucinations" that are causing the described panic attacks and that the medication does not allay this.

While collecting the patient's history, it is important to note that the patient's face is in fact expressionless, he does not smile, or show any emotions, he has a fixed gaze and does not blink his eyelids, the lip muscle coaptation is not perfect and his speech is sometimes unclear and at times the patient drools.

Therefore, the first two consultations are devoted to carrying out the "Mini International Neuropsychiatric Interview" as well as to negotiating the goals of the follow-up which are to re-evaluate the diagnosis of hallucinations and to see if a more effective treatment is possible.

The discussion also focuses on the observation that it seems difficult for the patient to maintain a regular follow-up with a psychiatrist.

The third consultation scheduled for July 2011 was cancelled by the patient. Following a telephone conversation, the patient gives a whole series of reasons for discontinuing the follow-up, which seem to be the result of confusion and misunderstandings that were not evident during the consultations. At the forefront of his explanation is the feeling that he is not understood.

While fully respecting his decision, the patient is nonetheless encouraged to make an appointment in order to clarify these misunderstandings. The patient eventually resumes contact in December 2011 only to discontinue the follow-up once again in March 2012. He resumes the follow-up in June 2012, this time with a regular follow-up possible until February 2013. The follow-up is once again discontinued by the patient who will come back in March 2014 when it was possible to engage in cognitive-behavioural therapy. Since then, the patient is followed-up regularly.

Prior to developing the diagnostic evaluation performed and the procedure for the cognitive-behavioural therapy goals, it seems to us that it is important to focus on the process that results in this patient initiating follow-ups only to discontinue them impulsively.

This behaviour was previously taken as a sign of paranoid and interpretative thoughts that may fall under a diagnosis of personality disorder or psychotic disorder with hallucinations and paranoid delusions. In trying to understand his experience of being misunderstood and persecuted and by analysing the misunderstandings, the influence of bilateral facial paralysis on communication was shown quite clearly.

The issue of the influence of facial paralysis on communication was introduced by taking another look at the lived experience of some patients met in liaison psychiatry who had developed unilateral facial paralysis ("Bell's palsy"). By merely changing their facial expression abilities, these patients described feeling as though they are no longer understood in the same way by their close friends and family.

Therefore, by using psychoeducation to teach the importance of non-verbal elements (particularly, emotion recognition using facial expressions) in communication, the patient was finally able to understand why he was feeling confused and misunderstood during the consultations. This is due in part to the fact that the therapist is looking at an inexpressive face and therefore is not able to perceive the emotional dimensions when the patient speaks. In addition, the therapist also has an expressionless face when looking at the patient, which may also result in a misunderstanding.

Thus, the increased awareness of this led to feedback being systematically given regarding the emotional experience at the end of each consultation.

This allowed for better compliance with the follow-up, and it was possible to continue the diagnostic work-up.

Based on the MINI and according to the DSM IV criteria, a moderate depressive disorder and a panic disorder were initially diagnosed.

The problem of hallucinations and feeling anxious raised the question of psychotic symptoms, which is also why the previous follow-ups mentioned the diagnosis of an unspecified psychotic disorder where several antipsychotic treatments were tried without obtaining satisfactory results.

Given the patient's better compliance with the follow-up and the therapeutic relationship that was developed, we were able to better analyse the content of his hallucinations. First observation, the patient describes that he is aware that it is not real but that he is still terrified when it happens. He describes them as images that intrude his mind. The content of these images is always the same: decapitation, mutilation of the face and the body. These intrusive images trigger certain behaviours in the patient such as having to touch his entire face to make sure it hasn't been disfigured as

well as repeatedly asking his relatives to reassure him that he has not disappeared and that no one is going to hurt him.

As we began to understand how these thoughts progress and the resulting behaviours, it was possible to diagnose the patient with obsessive-compulsive disorder and to subsequently formulate and negotiate cognitive-behavioural therapy goals with the patient.

The question of social phobia was investigated in the differential diagnosis. "The Appearance Anxiety Inventory: measure of body dysmorphic disorder" questionnaire (Veale et al. 2013), once completed, showed very low scores except for the question regarding excessive appearance concerns. Moreover, clinically, the patient describes feeling more comfortable if he is alone when he meets people because the people he meets talk directly to him; this is not the case when he is accompanied by his parents, the people he meets only see his "inexpressive" face and they interpret it as a sign of disability and do not directly speak to him, only to his relatives. This phenomenon of being considered as being "disabled", unable to express himself, seems to have rather reinforced the feeling of not existing and only being afraid of what the other person thinks. This facial reading could also explain the traumatic nature of the intrusive images that revolve around the theme of the fear of not being whole, being mutilated and feeling the need to be reassured. The patient has also established links between the intrusive images and the emotions associated with the experience of his various orthopaedic surgeries (foot and jaw) as well as future surgeries for multiple dental implants.

It was possible to carry out the cognitive behavioural therapy in a structured manner over 20 consecutive sessions. The work focused on psychoeducation about the mechanisms of obsessive compulsive disorder, by conceptualizing the principle of an obsession, experienced as a forced and intrusive thought or image even though it is virtual, that feels real and causes reactive anxiety. This compulsion, the act of thinking or actual motor behaviour, then leads the patient to try to lessen his anxiety but in fact reinforces the obsession.

The patient validated the indication for exposure therapy by preventing the behavioural response of checking his entire face and questioning his relatives.

Exposure to intrusive mental images with response prevention has been supported by systematic desensitization through the use of relaxation techniques.

Two family interviews also took place with psychoeducation about the treatment of obsessive-compulsive disorder and the supportive role the family should play in response prevention.

From the standpoint of the diagnosis of obsessive-compulsive disorder, the dose of paroxetine was increased to 30 mg (rather than the adding an antipsychotic drug).

In January 2015, based on a Visual Analogue Scale (VAS), the experience of intrusive images was assessed with a score of 9/10 in terms of discomfort on the quality of life scale and a score of 9/10 for the related anxieties. In January 2017, following the patient's continuing effort, the scores fell to 3/10 and 2/10, respectively.

Although there was a significant improvement in terms of decreasing his anxiety, the intrusive images did not completely disappear, however the patient was able to clearly change his emotional regulation. We were also able to note an increase in the frequency of the intrusive images, particularly around the time when several dental implant surgeries were performed; this would, once again, argue that these intrusive images are related to trauma.

The follow-up, more spaced out in terms of frequency, is still currently ongoing for reinforcement purposes.

## DISCUSSION

Based on the discussion of the case report and with respect to the literature, we clearly observe the characteristics of Mobius syndrome, i.e. the "mask-like" face, the inexpressive face, a fixed gaze making it difficult for the caregiver to perceive what the patient is feeling. It is sometimes difficult to understand the patient when he speaks due to the "bilabial incompetence" (Vaca et al. 2018). In this work, we can already identify two major obstacles in the psychiatric evaluation of patients with Mobius syndrome.

The literature shows that in younger subjects with Mobius syndrome, psychological adjustment problems are more frequent and lead to early interventions (Briegel et al. 2019). Our case report could suggest that it is also important to continue to provide appropriate follow-up for adults with Mobius syndrome and to pay close attention, over the long term, to the traumatic effects of the disorder and any resulting surgeries.

The analysis of our case also shows how it is possible to confuse paranoid symptoms and the difficulties in emotion recognition of facial expressions, which could result in misunderstandings. Calder et al. (2000) uses a case study to suggest that patients with Mobius syndrome are able to recognize facial expressions shown on a computer even though they themselves are unable to produce these expressions on their face and that therefore it is not a prerequisite to be able to produce these expressions.

However, these results are obtained on static pictures of people expressing emotions. In a context of dynamic communication, what really happens when the lack of expression on the face of the person with Mobius syndrome means that the person to whom they are speaking does not return an emotional facial response and they do not understand what the patient's is experiencing emotionally?

Facial expressions of emotion allows a person to communicate their emotional states and act as adaptive functions that facilitate social interactions (De Stefani et al. 2019).

We believe that psychoeducation about the non-verbal elements of communication should be a prerequisite prior to any psychiatric evaluation in a person with Mobius syndrome. In another case report (Gianni et al. 1984), learning to recognize social codes and to correctly interpret social behaviours is described as important for patients with Mobius syndrome who have a smaller social network due to their "mask-like face".

For Briegel (2006), it is quite common to observe impaired psychomotor development and language in Mobius syndrome; mental retardation occurs in 10 to 15% of cases and there could be more cases of autistic spectrum disorders. Briegel et al. (2010) screened autism spectrum disorders in 19 patients and did not find increased prevalence of autistic disorders.

As with our case report, we could speculate that because emotional interaction deficits are not taken into account in facial expression exchanges, this leads to misdiagnoses in people with Mobius syndrome: pseudo-indifference, autistic traits, mistrust or paranoia as also suggested by Cole et al. (2009).

In our case, the patient is not mentally retarded. However, we were not able to perform an IQ test in order to precisely assess his level. But over the course of the interviews, it could clearly be assumed that the patient has a normal cognitive development. Paradoxically, normal intellectual functioning results in greater lucidity and understanding of the difficulties. Szajnberg and Nathan (1994) identified the existence of insecure and ambivalent attachment disorder in a case report. Briegel et al. (2012) also highlighted the fact that social problems are common between the ages of 4 and 17 years in affected patients and that these patients would need assistance and support from their family. Briegel (2010) also emphasized the importance of assessing the subject's self-perception regardless of their appearance (which could suggest a depressive state) for the diagnostic process. Based on our case analysis, we believe that these recommendations should be maintained in adulthood.

## CONCLUSION

Mobius syndrome is associated with several malformations. In our case analysis, we note the presence of renal atrophy, bicuspid aortic valve and mitral valve prolapse in addition to clubfoot, and malformations of the jaw.

The lack of facial expression, characteristic of Moebius syndrome, could be misleadingly suggestive of autistic or depressive symptoms as described in the literature. Our case study shows that this can also result in diagnostic errors regarding paranoid or interpretive symptoms secondary to hallucinations whereas

the final diagnosis is actually an obsessive-compulsive disorder in reaction to trauma associated with the syndrome and the related surgeries.

Given that muscular hypotonia is related to the syndrome, we recommend exercising extreme caution when prescribing antipsychotics. In our case study, the various antipsychotics tested appear to have all caused disabling side effects at the usual recommended doses. The non-therapeutic response is also explained by the fact that these were not hallucinations related to a psychotic disorder but intrusive thoughts and images related to an obsessive-compulsive disorder that was best treated by cognitive and behavioural therapy.

If it is necessary to administer an antipsychotic drug to a patient with Mobius syndrome, we would recommend starting with very low doses.

We feel that educating the patient about the communicative consequences of impaired facial expressions and facial interactions is a necessary prerequisite for any psychiatric or psychological evaluation in subjects with Moebius syndrome.

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**Contribution of individual authors:**

Jacques Denis, Michel Ossemann, Jean-Marc Timmermans, Nicolas Zdanowicz & Thomas Dubois all made substantial contributions to the design of the study, and/or data acquisition, and/or the data analysis and its interpretation.

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Correspondence:

Jacques Denis, MD, MSc  
Université catholique de Louvain, Psychosomatics Unit,  
CHU Ucl Namur Godinne Hospital  
5530 Yvoir, Belgium  
E-mail: denis.jacques@uclouvain.be