Presentation of Capgras Syndrome in anti-NMDA receptor encephalitis: a Neuro-Rehabilitation approach

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SUMMARY

A middle-aged gentleman with multiple sclerosis was diagnosed with anti-NMDA receptor encephalitis. He suffered from the typical sequelae including seizures, dysautonomia, anxiety, agitation, and memory impairment but unusually developed a rare delusional misidentification disorder whereby he believed that his wife and children were imposters – Capgras syndrome.

Initial management with risperidone was limited due to sedating side-effects resulting in poor engagement with rehabilitation. Switching to aripiprazole and escitalopram to target his delusions resulted in a partial response – he became accepting of his children's identities. Discharge planning was difficult due to concerns of continuing aggression towards his wife. Additionally, sidestepping techniques were used to manage conflict – he became more accepting of his wife when introduced as a 'loving friend', improving chances of a discharge home. This therefore illustrates the synergistic effect of pharmacological and psychological/psychiatric intervention with non-confrontational techniques by the multi-disciplinary team in managing patients like this.

BACKGROUND

Anti-NMDA receptor encephalitis is known to present with psychiatric symptoms like agitation, anxiety, hallucinations and simply-formed delusions. Capgras syndrome however is very rarely described after anti-NMDA receptor encephalitis. The challenging aspects of the case revolve around the patient's persecutory beliefs, his delusional misidentifation disorder and its subsequent management. This case is relevant to rehabilitation medicine in light of how Capgras sydrome affected this patient's discharge planning, engagement with the multi-disciplinary team during rehabilitation and pharmacological management.

INITIAL PRESENTATION

This middle-aged patient with known relapsing-remitting multiple sclerosis (diagnosed in 2010, previously treated with daclizumab) presented with seizures, headache, rash and intermittent fevers. Despite initial treatment for infectious/viral meningoencephalitis, he deteriorated and developed status epilepticus requiring Intensive Care (ICU) management.

Probable anti-NMDA receptor encephalitis
All three criteria must be met:
1. Rapid onset (<3 months) of at least four of the six following major groups of symptoms:
Abnormal (psychiatric) behaviour or cognitive dysfunction
Speech dysfunction
Seizures
Movement disorder, dyskinesias, or rigidity/abnormal postures
Decreased level of consciousness
Autonomic dysfunction or central hypoventilation
2. At least one of the following laboratory results:
Abnormal EEG
CSF with pleocytosis or oligoclonal bands
3. Reasonable exclusion of other disorders
Definite anti-NMDA receptor encephalitis
1. IgG anti-GluN1 (NMDAR1) antibodies in the presence of one or more of the six major groups of symptoms, after reasonable exclusion of other disorders

Table 1: Diagnostic criteria for anti-NMDA receptor encephalitis

Graus F, Titulaer MJ, Balu R, et al. A clinical approach to diagnosis of autoimmune encephalitis. Lancet Neurol 2016; 15:391

Red = complications suffered by the patient

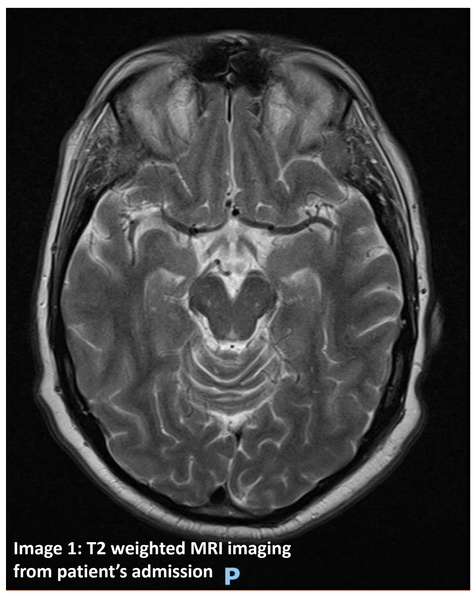

Image 1: T2 weighted MRI imaging from patient's admission P

Investigations throughout admission:

- Initial cerebrospinal fluid (CSF) analysis: high protein (1.17g/L), pleocytosis (white cells 52/mm3, 90% mononuclear cells) and normal glucose.
- MRI head: "Whilst the white matter lesions are typical for demyelination, the mesial temporal lobe signal abnormality and new right para-hippocampal gyrus enhancement is more suggestive of viral encephalitis." *(see Image 1)*
- Electroencephalogram (EEG) was performed but did not determine any definite aetiology.
- Repeat CSF analysis revealed NMDA receptor antibodies positivity with weakly positive paired serum levels.
- PET-CT and testicular ultrasound demonstrated no evidence of malignancy.

Diagnosed with anti-NMDA receptor encephalitis *(see Table 1),* he was started on immunosuppressive therapies (high dose steroids, and plasma exchange). Due to the progression of his symptoms he ultimately received a second course of plasma exchange, one cycle of rituximab, intravenous immunoglobulins, further steroid therapy, and six cycles of bortezomib.

CAPGRAS PRESENTATION

After ICU discharge, the patient was noted to have worsening confusion and psychotic features (distressing hallucinations, paranoia, low mood and frustration). The patient's delusional misidentification disorder regarding his partner also became apparent: he described his partner as looking the same as his partner but not being 'his' partner. The patient felt his partner had assimilated into his family and believed that his family did not realise that she was an imposter. He believed hospital staff were complicit in editing old family photos, changing them to make his imposter partner look more like the partner of old. The patient felt that there was a discrepancy between the eyes that allowed him to distinguish between the true partner and imposter. At this point the patient was diagnosed with Capgras syndrome.

DISCUSSION

There are no diagnostic criteria for Capgras syndrome; it is typically described as a delusional misidentification disorder with the belief that a close relative or family member has been replaced by an identical or near-identical imposter[2]. Capgras syndrome is known to concurrently occur with neurological diseases such as epilepsy, cerebrovascular diseases, traumatic head injury and more frequently in neurodegenerative diseases (especially Lewy body disease and Alzheimer's dementia)[4]. Capgras syndrome in the setting of anti-NMDA receptor encephalitis is rarely described, despite the well-known phenomenon of psychiatric manifestations in autoimmune encephalitis[1].

A widely accepted theory was put forth by Ellis and Young, who described Capgras syndrome as a 'mirror image' of prosopagnosia. They suggested that two components are required in recognising familiarity in faces: the conscious recognition requiring recall of associated semantic information (inferior temporal lobe), and the limbic-mediated emotional arousal (particularly the amygdala). Prosopagnosia is when there is an inability to consciously recognise the face but are still able to elicit an emotional response subconsciously – as evidenced by a strong skin conductance response despite subjects reporting that a face is not familiar. In contrast, while conscious recognition is intact in people with Capgras, its connection to the limbic system is disrupted leading to memory mis-management, rendering the recognised face devoid of emotional association[6]. Hirstein and Ramachandran further build on this theory, adding that a second lesion in the right frontal cortex (in charge of global 'consistency-checking' mechanisms) must also disrupt this function in order to allow the left hemisphere to confabulate unchecked, thus leading to the generation of the following explanation: an imposter has taken over a familiar person hence they no longer feel familiar[7]. This is known as the 'two hit hypothesis': the first hit disrupts the connection between the ventral stream processing in the temporal lobe and the limbic complex, the second affecting the right frontal cortex.

REHABILITATION

The patient was transferred to the neuro-rehabilitation unit (NRU) after an eight-month stay in the ICU and a three-week stay on a general neurology ward. The management of this patient was multi-factorial as there were several goals set as part of his stay within the rehabilitation unit. One goal was regarding his deconditioning and difficulty mobilising. Another was his cognitive rehabilitation, as his episodic memory was poor, he was dysexecutive, struggling to make simple decisions and initiate/sequence processes.

Psychiatry

On arrival to the NRU the patient was receiving 1mg bd risperidone and while this did not sedate the patient, it did not resolve the patient's psychotic symptoms. On increasing risperidone to 1.5mg bd the patient described his clarity as improving to "75%". A subsequent increase to 2mg bd was largely ineffective in ameliorating his delusions while causing more sedation to the extent where he could no longer engage with therapy sessions. Overall it appeared that the risperidone had a partial response and after discussion with the Encephalitis MDT, a decision was made to change the regime to aripiprazole and escitalopram. The patient was started on 10mg escitalopram and eventually up-titrated on aripiprazole to 15mg. This regime was less sedating and resulted in the delusion partially improving. It did not completely resolve however, potentially reflecting the resistant nature of Capgras syndrome.

Psychology

In contrast to other NRU patients, there were no partner-based goals set for this patient. Therefore, sessions regarding the patient's brain injury and cognitive function occurred with the patient and his children or the children directly, led by doctors or therapists. The patient was keen for information to his children about his brain injury to come directly from him as he did not trust his 'imposter' partner to deliver the information accurately. When the risperidone was weaned down and replaced with aripiprazole and escitalopram, the patient appeared to be more socially engaging and expressed more emotions. Theory A/B strategy was used as a method of comparing the patient's views to the objective reality. This allowed the patient to try rationalise through the hallucination and orientate himself accordingly, although this was difficult due to the poor recall and episodic memory from the existing brain injury.

Occupational Therapy

Due to his Capgras syndrome, the patient's partner was advised not to act as the primary care giver and was not involved to the same extent as a primary care giver would in therapy-run sessions involving washing and dressing or personal care as it was deemed too risky for the partner. Home visits appeared successful as he tolerated his partner's presence well within the family home and did not appear distressed visually. On subsequent questioning however when asked about the strength of his delusion and whether he still believed his partner to be an imposter, the patient stated that he felt they were "100%" an imposter. Consequently, the patient was thought to need an external carer on discharge.

Speech and Language Therapy (SLT)

Usually communication work is performed with the "main communication partner" which in most cases is a patient's partner. In this case this was not done as the patient would be unlikely to engage otherwise and conversation training had to be adapted. Consequently, the communication practice was done between the patient's parents and children, and separate work was done with the partner in isolation. Normally SLT would video conversation partner training to help the communication behaviour of the partner but this was not feasible here. A communication partner group is usually helpful to provide peer support for patients and their respective partners but in this case the patient attended with his parents.

When any issues developed that would require acknowledging the partner, the partner was mentioned directly by name rather than by in relation to the patient. The patient tolerated his partner better following introductions performed in this manner. Any conflicts that might arise were thus sidestepped.

Physiotherapy

The family (including his wife) were involved with therapy sessions offering encouragement and support, however the degree of support was limited to supervision rather than physical help. Thus, the Capgras syndrome did not greatly affect the patient's physiotherapy; his cognition and lack of initiation had a larger impact on physiotherapy progress.

Nursing

On a day-to-day basis the patient's Capgras syndrome did not interfere with toileting, personal care and medication. The nursing staff noted that the patient had very fixed views and was not keen to compromise – for example, when asked about using bottles to help manage his urinary incontinence, the patient flatly denied that this was a problem and refused to engage. Through prompting and suggestions, the nursing staff were able to eventually encourage the patient to use bottles even though the patient continued to deny any issues of urinary incontinence. In this case, the patient's behaviour may have been more reflective of his change in cognition rather than Capgras syndrome.

Perspective from patient's partner

On discussion with the patient's partner, she noted that towards the end of his ICU admission his behaviour towards her appeared to change and he would no longer make eye contact with her. He would ask her to leave when other family were present and even ask "Who are you?". The patient's partner subsequently tried to engage with the patient by bringing in cake and food which the patient loved, and thus using that to build rapport. By the end of his admission to the NRU, the patient's partner noted that physically his walking had improved and mobilised with more confidence. Emotionally the patient appeared to have developed, changing from being vocally 'flat' to having more nuance and intonation. He appeared more expressive, more alert and "more him". His empathy appeared to improve and he demonstrated more natural and appropriate behaviour, more typical for him pre-morbidly. With more engagement from the patient, his partner also highlighted more disinhibited speech and activity, while being less physically affectionate (especially towards her) than before.

Overall, by the end of their NRU stay the patient was "warmer" in his behaviour to his partner. Difficulties remain however the partner feels that she will be able to be a "force for good" with the patient. The patient underwent a graded discharge with intended plans for a 24-hour self-funded package of care.

LEARNING POINTS

- From a rehabilitation perspective, when managing a patient suffering from Capgras syndrome adaptation of existing practices may be required in order to ensure the patient is not antagonised by having to engage with the subject of their delusion.
- Managing complicated patients like this involves not only pharmacological options but also psychological/psychiatric intervention and employment of non-confrontational techniques to help them engage better with rehabilitation.

Special thanks to Dr Olivia Breen, Katie Atkinson, Emma Bretherton, Sarah Barry-Reidy, Dennis Minioza and all the staff at the NRU

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