

Before Bladder Incontinence can be attributed to MUSK-Positive Myasthenia, all Alternative Causes must be Thoroughly Ruled Out

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LETTER TO THE EDITOR

We read with interest the article by Kwegyir-Aggrey *et al.* about a 71-year-old female with MUSK-positive myasthenia which initially presented with bladder incontinence, both of which responded positively to rituximab [Kwegyir-Aggrey, A. *et al.*, 2024]. The study is impressive, but some points require further discussion.

The first point is that other causes of incontinence besides myasthenia have not been sufficiently ruled out. Alternative causes of bladder incontinence should be considered in elderly patients, particularly given that incontinence has not previously been reported as a feature of MUSK-positive myasthenia. In a patient with an unusual combination of abnormalities, dual pathology that responds to the same treatment for both must be thoroughly ruled out.

The first differential causes that need to be ruled out are SARS-CoV-2 infection (SC2I) and SARS-CoV-2 vaccination (SC2V), both of which can be complicated by bladder incontinence [Hmaidan, S. *et al.*, 2023]. Since the case was obviously recruited during the pandemic, it is imperative to clarify the vaccination status, neutralising antibody titers, and whether or not the index patient had SC2I/SC2V. SC2I/SC2V must be excluded, as rituximab could have a positive effect not only in MUSK-positive myasthenia, but also in SC2I/SC2V-related incontinence [Ma, Q. *et al.*, 2022].

The second differential diagnosis is a spinal cord lesion. Spinal cord MRI is missing to rule out prolapse, stroke, myelitis, vertebral stenosis, spondylarthrosis, chondrosis, osteochondrosis, spinal varices, syringomyelia, listhesis, or radiculitis.

The third differential cause is a gynaecological disorder. What were the results of the clinical gynaecological examination and of gynaecological

ultrasound? Was the history positive for previous gynaecological procedures?

The second point is that bladder incontinence was not adequately examined by a neuro-urologist before and after treatment. Urodynamic studies are essential to determine whether the incontinence is due to detrusor hyperreactivity, detrusor sphincter dyssynergy, or sphincter dysfunction. Urodynamic examinations are also useful to document the treatment effect.

The third point is that no single fibre electromyography (SF-EMG) from striated pelvic floor muscles had been recorded. To assess the extent to which myasthenia of pelvic floor muscles contributed to incontinence, it would have been mandatory to perform SF-EMG and to determine the number of blockings and the degree of jitter.

The fourth point is that comorbidities and comedication were not reported [Kwegyir-Aggrey, A. *et al.*, 2024]. A 71-year-old female is suspected of having a previous illness and regularly taking medications. Because several medications can cause incontinence as a side effect, it is imperative to have this information. Medications that cause or worsen incontinence include prostaglandins, beta-blockers, cholinergics, cholinesterase inhibitors, digitalis, diuretics and tamsulosin. Is it conceivable that the incontinence was due to taking acetylcholinesterase inhibitors and disappeared when pyridostigmine was discontinued? Immune checkpoint inhibitors are also known to cause incontinence [Hu, Y. *et al.*, 2022].

The fifth point is that MUSK antibodies were not repeatedly determined to assess whether their elevation occurred only once, fluctuated, or was present continuously.

In summary, the excellent study has limitations that should be addressed before drawing final conclusions. Clarifying the weaknesses would

strengthen the conclusions and could improve the study. Before bladder incontinence can be attributed to MUSK-positive myasthenia, all differential causes must be thoroughly ruled out.

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