



Hospital Italiano

Sacral Neuromodulation in Multiple Sclerosis: A Risk-Stratified Model for Patient Selection

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MAASTRICHT

BACKGROUND

Lower urinary tract dysfunction in multiple sclerosis is highly prevalent and heterogeneous.

Outcomes of sacral neuromodulation in this population are often perceived as inconsistent, limiting its clinical use.

AIM

To develop a risk-stratified model for patient selection in sacral neuromodulation for multiple sclerosis, based on clinical phenotype, urodynamic findings and disease trajectory.

METHODS



Systematically informed narrative review.



MEDLINE, Embase and Cochrane databases.



Studies evaluating efficacy, safety and durability of SNM in MS.



Data analysed according to clinical phenotype, urodynamic findings and disease trajectory, using a pathophysiological framework.

RESULTS

RISK-STRATIFIED MODEL FOR PATIENT SELECTION

Higher likelihood of response

Lower likelihood of response

LOW RISK

Higher and sustained response rates



Stable disease



Predominant storage symptoms



Detrusor overactivity with preserved contractility



Low post-void residual volumes

INTERMEDIATE RISK

Variable response



Stable or mildly progressive disease



Mixed symptoms (storage and voiding)



Variable urodynamic findings



Normal or moderately elevated post-void residual volumes

HIGH RISK

Reduced efficacy and higher risk of failure



Progressive disease



Predominant voiding dysfunction



Detrusor underactivity



Elevated post-void residual volumes

Detrusor contractility

consistently emerges as a key determinant of response across studies.

KEY FINDINGS

1

SNM provides clinically meaningful improvement in carefully selected patients with MS.

2

Higher response rates and greater durability are observed in patients with stable disease, predominant storage symptoms and preserved detrusor contractility.

3

Progressive disease, detrusor underactivity, elevated post-void residual volumes and significant voiding dysfunction are associated with reduced efficacy and higher likelihood of treatment failure or revision.

4

Reported variability across studies reflects heterogeneity in patient selection rather than intrinsic inconsistency of the therapy.

INTERPRETATION

SNM outcomes in MS appear predictable when interpreted within a pathophysiological framework, integrating clinical phenotype, urodynamic findings and disease trajectory.

CONCLUSION

A risk-stratified approach provides a clinically relevant and actionable framework to guide patient selection, optimise outcomes, and reduce inappropriate intervention in patients with MS.