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Short communication

Treatment of pressure ulcer in a patient with multiple sclerosis: Wound care products, pharmacotherapy and pharmacoeconomic considerations

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Introduction

Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system characterized by inflammation, demyelination and neurodegeneration (NINDS, 2025). Progressive disability and long-term immobilization increase the risk of secondary complications, among which pressure ulcers represent one of the most important clinical challenges. Pressure ulcers are associated with pain, infection, prolonged treatment, reduced quality of life and increased healthcare expenditures (Padula and Delarmente, 2019). Their management requires a multidisciplinary approach involving neurologists, surgeons, nurses and pharmacists.

The present case is particularly notable due to the exceptionally long disease duration of 39 years, exceeding the average survival reported in patients with multiple sclerosis (Duncan, 2024). This case report describes the management of a stage IV pressure ulcer in a patient with long-standing MS and discusses wound care products, pharmacotherapy and pharmacoeconomic considerations of the applied therapeutic approach.

Materials and methods

A 70-year-old female patient with MS diagnosed in 1986 was followed through medical records obtained from the University Clinic of Neurology in Skopje after informed consent had been obtained. The patient's medical history covering the period from 1986 to 2025 was analyzed.

The patient had been receiving long-term symptomatic treatment for MS, including vitamin B1, B6 and B12 supplementation, baclofen for muscle relaxation and pentoxifylline for circulation, in accordance with treatment approaches used in North Macedonia (MS Macedonia, 2019). Interferon therapy was administered for one year in 2002 and resulted in temporary clinical improvement. Previous studies have shown that interferon therapy may reduce relapse frequency and improve long-term outcomes in patients with MS (Hua et al., 2025).

Due to prolonged immobilization and bedridden status since 2017, a stage IV pressure ulcer developed on the ischial region in February 2024. Microbiological examination of the wound revealed infection with *Enterococcus spp.* and *Bacteroides fragilis*.

Results and discussion

The patient has been living with multiple sclerosis for 39 years, considerably exceeding the average survival reported in patients with MS (Duncan, 2024). Long-term symptomatic treatment contributed to disease management and quality of life, while

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interferon therapy administered in 2002 resulted in temporary clinical improvement.

Prior to microbiological confirmation, several topical preparations available on the N. Macedonian market had been used, including silver sulfadiazine ointment, silver sulfadiazine nano spray and a cannabis-based ointment; however, these approaches failed to achieve satisfactory clinical improvement. Current guidelines recommend pressure redistribution, debridement, infection control and maintenance of a moist wound environment as key principles of pressure ulcer management (Gould et al., 2024; EPUAP/NPIAP/PPPIA, 2019). Various wound-care products are available in N. Macedonia, including povidone-iodine solutions (e.g., Betadine®), silver sulfadiazine formulations, hydrocolloid dressings (e.g., Granuflex®), alginate dressings (e.g., Kaltostat®), silver-containing dressings (e.g., Aquacel® Ag), as well as barrier creams and protective ointments.

Microbiological analysis revealed infection with *Enterococcus spp*. and *Bacteroides fragilis*, indicating the need for systemic antibiotic treatment with cefixime and metronidazole. Necrotic tissue was surgically removed, and the wound was managed with daily cleansing using sterile saline solution followed by dressings containing povidone-iodine (Betadine®), resulting in complete healing within one year.

From a pharmacoeconomic perspective, the applied treatment demonstrated favorable clinical and economic characteristics. The use of relatively inexpensive and readily available products, including saline solution, povidone-iodine dressings and oral antibiotics, resulted in complete wound healing while avoiding recurrent hospitalizations and advanced surgical procedures. The patient remained in home care throughout the treatment period, potentially reducing healthcare expenditures associated with inpatient treatment and long-term institutional care.

Given the complete healing of the ulcer within one year and the absence of reported recurrence, the applied therapeutic approach may be considered pharmacoeconomically favorable. For prevention of additional pressure ulcers, the patient's position was changed every 3–4 hours. Furthermore, a wax-based preparation was used on pressure-prone areas, while Calendula officinalis ointment was applied to the heels together with heel elevation.

Conclusion

The stage IV pressure ulcer in this patient with long-standing multiple sclerosis was successfully managed through surgical debridement, systemic antibiotic therapy and daily wound care using saline solution and povidone-iodine dressings. Preventive interventions, including regular repositioning and topical protective preparations, proved beneficial in preventing the development of new lesions. This case highlights the importance of individualized, evidence-based wound management in patients with chronic neurological diseases and suggests that the use of accessible and affordable therapeutic options may provide favorable clinical and pharmacoeconomic outcomes.

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