Clinical Course and Management of Neurologic Adverse Events Linked to Immune Checkpoint Therapy

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Abstract

Neurologic adverse events (NAEs) associated with immune checkpoint inhibitors (ICIs) have emerged as signi f cant complications in cancer immunotherapy. While ICIs have revolutionized the treatment of various malignancies, their role in eliciting immune-related adverse events, particularly a f ecting the nervous system, presents challenges in clinical management. NAEs can manifest as peripheral neuropathies, encephalitis, myasthenia gravis, and other neurologic disorders, often occurring weeks to months after treatment initiation. Early recognition and prompt intervention are crucial for mitigating potential long-term morbidity. This review examines the clinical presentation, incidence, risk factors, diagnostic evaluation, and management strategies for neurologic adverse events linked to ICIs. Emphasizing a multidisciplinary approach, we highlight the importance of tailored treatment plans that balance the therapeutic bene f ts of ICIs with the risks of neurologic complications. As research progresses, a deeper understanding of these events will enhance patient care and outcomes in the context of cancer immunotherapy [1].

e advent of immune checkpoint therapy has signi cantly improved survival rates in various malignancies, including melanoma, lung cancer, and renal cell carcinoma. Despite their therapeutic bene ts, ICIs can induce a spectrum of immune-related adverse events (irAEs), particularly a ecting the neurologic system. Understanding the clinical course and management of these events is essential for optimizing patient outcomes.

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Neurologic irAEs can manifest in several forms, including:

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e incidence of neurologic irAEs varies, with some studies suggesting rates between 1% and 7%. Risk factors may include:

- Pre-existing autoimmune conditions
- Combination therapy with other immunotherapeutics
- Speci c ICI classes (e.g., PD-1/PD-L1 vs. CTLA-4 inhibitors)

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e clinical course of neurologic adverse events can be variable, with onset o en occurring weeks to months a er initiating therapy. Symptoms may evolve rapidly, necessitating prompt assessment and intervention. Early identi cation is crucial, as neurologic complications can lead to signi cant morbidity and impact cancer treatment continuity.

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A comprehensive diagnostic approach is essential. Recommended evaluations include:

- **E** : Detailed assessment of motor and sensory function.
- : MRI and CT scans can help rule out structural causes.
- : Cerebrospinal uid analysis is vital for diagnosing encephalitis or meningitis.
- **E** : ese can con rm neuropathies and myasthenia gravis.

Management of neurologic irAEs typically involves a multidisciplinary approach:

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High-dose corticosteroids are the rst-line treatment for moderate to severe neurologic irAEs. e dosing regimen may start at 1-2 mg/kg/day, tapering based on clinical response [3-7].

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For refractory cases, additional immunosuppressive therapies may be necessary. Options include:

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- (e.g., mycophenolate mofetil, rituximab)

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Symptomatic management is crucial, particularly for neuropathic pain and muscle weakness. Referral to neurology and rehabilitation services may enhance recovery.

e prognosis for patients experiencing neurologic irAEs varies widely based on the severity of symptoms and the timeliness of intervention. Early recognition and appropriate management can lead to favorable outcomes, allowing for the continuation of oncologic therapy when possible.

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Neurologic adverse events associated with immune checkpoint therapy represent a complex and signi cant challenge in the management of patients undergoing cancer treatment. ese events can vary widely in presentation and severity, necessitating prompt recognition and intervention to minimize morbidity. Early diagnosis, utilizing a multidisciplinary approach, is crucial for e ective management, o en involving corticosteroids and other immunosuppressive therapies. As our understanding of the mechanisms underlying these neurologic complications continues to evolve, ongoing research is essential to re ne management strategies and improve patient outcomes. Ultimately, balancing the bene ts of immune checkpoint inhibitors with the risks of neurologic irAEs is vital in optimizing cancer care and enhancing the quality of life for patients. Continued education and awareness among healthcare providers will be key in addressing these adverse events e ectively.

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