"No-No" Head Tremor as a Rare Neurological Manifestation of Metastatic Breast Cancer

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INTRODUCTION

- Essential tremors usually involve the limbs; isolated head/neck tremors are rare (<10%) and often misdiagnosed.
- Based on direction: lateral ("No-No"), vertical ("Yes-Yes"), or mixed tremor.
- Tremors can be secondary to neurological disorders including CNS metastasis.
- We report a rare case of "No-No" head tremor in a young female with breast cancer and leptomeningeal metastasis.

CASE PRESENTATION

2021 — Diagnosed with invasive ductal carcinoma of right breast.
Received 8 cycles of neoadjuvant chemotherapy, followed by modified radical mastectomy and adjuvant radiotherapy (50 Gy/25# to chest wall, axilla, supraclavicular area + 10 Gy/5# boost to chest wall) till 2nd August 2021.

10th September 2024 — Presented with multiple episodes of vomiting and giddiness.
MRI brain: T2/FLAIR hyperintensity in right temporal periventricular & subcortical region; similar areas in spinal cord (C2–C3, D1–D2) – suggestive of demyelination vs metastasis.

Same day — PET-CT: Enhancing hypermetabolic lesion in right temporal cortex with peri-lesional edema and diffuse leptomeningeal enhancement.

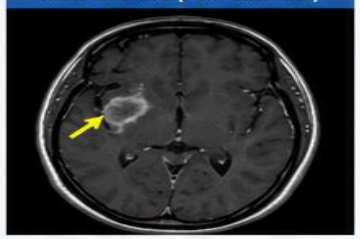
Same day — Episode of generalized tonic–clonic seizure (≈8 minutes) with urinary & stool incontinence followed by post-ictal confusion.

Post-seizure — Onset of rhythmic horizontal head tremor ("No-No" tremor), small amplitude.

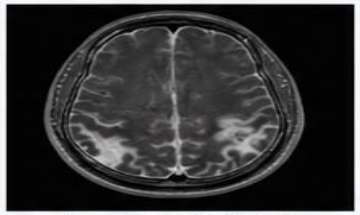
Investigations
- CSF: Protein ↑, TLC 1900 cells (75% lymphocytes)
- Cytology: Atypical malignant cells with binucleation, multinucleation, vacuolated cytoplasm & atypical mitosis.

CLINICAL & DIAGNOSTIC FINDINGS

MRI BRAIN (Post-contrast)

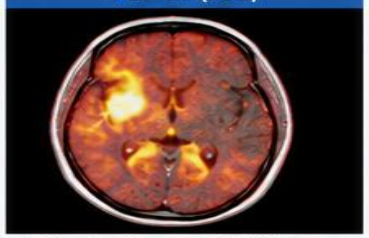


1.5 × 1.4 × 1.3 cm lesion in right temporal region with perilesional edema

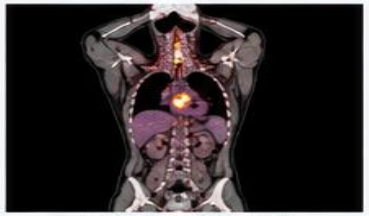


Diffuse leptomeningeal enhancement in bilateral parieto-temporo-occipital regions

PET-CT (FDG)

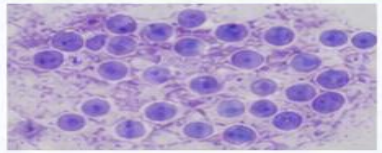


Enhancing hypermetabolic lesion in right temporal cortex with peri-lesional edema



Diffuse leptomeningeal enhancement with low-grade hypermetabolism in upper cervical spinal cord

CSF CYTOLOGY (Microscopy)



Atypical cells with binucleation and multinucleation, vacuolated cytoplasm and atypical mitosis – suggestive of malignant cells.

TREATMENT & OUTCOME

Intrathecal Chemotherapy
2 cycles of Intrathecal Methotrexate till 25th September 2024.

Whole Brain Radiotherapy
30 Gray in 10 fractions by 3DCRT technique.

Outcome
Patient took discharge against medical advice and was shifted to her home, where she eventually passed away.

DISCUSSION

- Tremor in CNS metastasis may result from disruption of cerebellar pathways by parenchymal or leptomeningeal disease.
- Pathophysiology may involve Purkinje cell degeneration, GABAergic dysregulation, and increased activity in cerebello-rubral circuits.
- Leptomeningeal metastasis can irritate/compress midline cerebellar structures, precipitating tremor.
- Management of essential tremor includes beta-blockers, benzodiazepines, antiepileptic drugs.
- Deep brain stimulation targeting the ventral intermediate nucleus of the thalamus is effective in refractory cases.

CONCLUSION

This case underscores the importance of considering CNS metastasis in patients with known malignancy presenting with atypical tremors. Early recognition and multidisciplinary approach are crucial for appropriate diagnosis and management.

TAKE-HOME MESSAGES

- "No-No" head tremor is a rare presentation and can be a clue to underlying CNS pathology.
- Leptomeningeal metastasis should be considered in cancer patients with new-onset tremors.
- CSF cytology is essential for differentiating metastatic disease from demyelination.
- Multidisciplinary evaluation is key for timely diagnosis and optimal patient care.

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