ASSOCIATION OF CISPLATIN-INDUCED NEPHROTOXICITY AND OTOTOXICITY WITH HEALTH-RELATED QUALITY OF LIFE AND ECONOMIC BURDEN IN CANCER PATIENTS

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2021

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KEY FINDINGS AT A GLANCE

42
Adult cancer patients enrolled on cisplatin-based chemotherapy

26.2%
Developed nephrotoxicity (serum creatinine, eGFR, creatinine clearance)

14.3%
Developed ototoxicity (pure-tone audiometry, hearing threshold)

52.4%
Reported increased healthcare utilization driving economic burden

BACKGROUND

Cisplatin is widely used in the treatment of solid malignancies. However, its clinical utility is limited by treatment-related toxicities particularly nephrotoxicity and ototoxicity which may adversely affect Health-Related Quality of Life (HRQoL) and increase healthcare expenditure.

OBJECTIVE

To evaluate the impact of cisplatin-induced nephrotoxicity and ototoxicity on Health-Related Quality of Life and economic burden among Indian cancer patients in a real-world oncology setting.

STUDY AT A GLANCE

- Single-centre, prospective observational study
- Conducted January–May 2025
- 42 adult patients on cisplatin-based chemotherapy
- Renal, auditory, HRQoL and cost outcomes tracked prospectively

CLINICAL IMPLICATIONS

Routine renal and audiometric monitoring should be embedded in cisplatin treatment protocols.

Early identification of toxicity enables timely supportive care and dose modification.

Patient-centered strategies can reduce HRQoL decline and downstream healthcare costs.

Findings support incorporating toxicity-related cost data into future cost-effectiveness models.

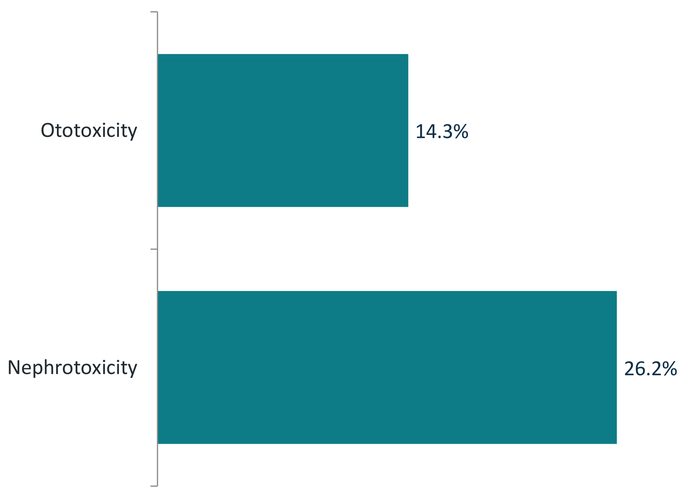
CLINICAL RELEVANCE

These real-world findings can inform HEOR-driven toxicity monitoring protocols and support health-system conversations on the value of early nephrotoxicity and ototoxicity screening during platinum-based chemotherapy.

METHODS

- **Design & Duration:** Prospective observational study, January–May 2025
- **Setting:** Dept. of Medical Oncology, Sri Ramachandra Medical Centre, Chennai, India
- **Participants:** 42 adult cancer patients receiving cisplatin-based chemotherapy
- **Nephrotoxicity assessment:** Serum creatinine, estimated GFR, creatinine clearance
- **Ototoxicity assessment:** Pure-tone audiometry and hearing threshold analysis
- **HRQoL assessment:** EORTC QLQ-C30 questionnaire
- **Economic burden:** Direct medical costs — hospitalization, hydration therapy, laboratory investigations, audiometric monitoring, supportive medications, toxicity management
- **Statistical analysis:** IBM SPSS Statistics, version 26.0

TOXICITY INCIDENCE (N = 42)



ECONOMIC BURDEN DRIVERS

- Hospitalization for toxicity management
- Hydration therapy during chemotherapy cycles
- Laboratory investigations (renal function)
- Audiometric monitoring
- Supportive medications

RESULTS

Among the 42 patients enrolled, nephrotoxicity was observed in 26.2% and ototoxicity in 14.3% of patients.

HRQoL assessment demonstrated significant deterioration in physical functioning, social functioning, fatigue, and global health status following chemotherapy exposure.

Patients with ototoxicity experienced impaired communication and reduced social interaction, whereas nephrotoxicity contributed to increased hospitalization and supportive care requirements.

Increased healthcare utilization (52.4%) due to renal monitoring, audiometric evaluation, and supportive care significantly contributed to treatment-associated economic burden.

CONCLUSIONS

Cisplatin-induced nephrotoxicity and ototoxicity were significantly associated with deterioration of HRQoL and increased economic burden among cancer patients.

Early toxicity monitoring and patient-centered supportive care strategies are essential to improve treatment outcomes and reduce toxicity-related burden in routine oncology practice.

LIMITATIONS

The relatively small sample size (n = 42) and short study duration (5 months) may limit the generalizability of findings and the ability to detect longer-term trends in toxicity-related economic burden. As a single-center study, findings may not be representative of broader oncology populations.

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CONCEPTUAL FRAMEWORK

Cisplatin-based chemotherapy (n = 42) → **Nephrotoxicity (26.2%) & Ototoxicity (14.3%)** → **HRQoL decline (physical & social functioning, fatigue, global health)** → **Increased healthcare utilization & economic burden (52.4%)**

ACKNOWLEDGMENTS & DISCLOSURES

The authors thank the Department of Medical Oncology, Sri Ramachandra Medical Centre, and all participating patients.
No financial disclosures.

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