D4Z4 repeat array and several oculopharyngodistal myopathy (OPDM) genes (*GIPC1*, *NOTCH2NLC*, *RILPL1*, *ABCD3*).

Conclusion LRS provided a streamlined approach to identifying a range of different pathogenic variants and led to resolution of a significant proportion of our previously undiagnosed genetic myopathy cohort. In particular, we identified a number of recently described pathogenic short tandem repeat expansions in OPDM genes for which clinically accredited genetic testing is not currently available in Australia.

YI6 MS OUTCOMES IN BREAST CANCER SURVIVORS AND THE INFLUENCE OF CHEMOTHERAPY

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Background Managing multiple sclerosis (MS) in cancer survivors is complex due to immune system interactions and the impact of treatment. Limited guidance exists on disease-modifying therapy (DMT) use during and after chemotherapy. This study examined how DMT decisions in breast cancer influence MS outcomes and whether chemotherapy itself affects MS disease activity.

Methods Data were obtained from the MSBase registry, including 172 individuals with MS and breast cancer who received chemotherapy, and 229 for whom chemotherapy data were not available. Survival analyses assessed time to first relapse and confirmed disability progression (CDP) after cancer diagnosis, with DMT modelled as a time-varying covariate. Propensity score matching compared outcomes between those who received cancer chemotherapy adjuvant to their MS treatment and matched controls receiving standard MS treatment alone.

Results Post-chemotherapy MS management varied, with most clinicians de-escalating or withholding DMTs. Older age was associated with lower relapse risk (HR = 0.90, 95% CI: 0.93–0.97, p = 0.001). Chemotherapy had a protective effect on time to first relapse (HR 0.58, 95% robust CI: 0.37 to 0.95, p = 0.03) compared to matched controls receiving standard MS treatment. Chemotherapy was not associated with a significant effect on CDP (HR 0.68, 95% robust CI: 0.38–1.23, p=0.06).

Conclusion Chemotherapy was associated with better relapse outcomes compared to standard therapy in matched controls, supporting withholding or de-escalating DMTs during cancer treatment. DMT reinitiation should be guided by individual risk assessment and may be less indicated in older individuals, who demonstrated a lower relapse risk following chemotherapy.

YI7 A MACHINE LEARNING APPROACH TO DIFFERENTIATING STROKE FROM VESTIBULAR NEURITIS USING HISTORY, EXAMINATION AND VESTIBULAR TESTS

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Background/Objectives Vestibular Neuritis (VN) and Posterior Circulation Stroke (PCS) are the two common causes of Acute Vestibular Syndrome. Expert clinicians distinguish between them using history, examination, and vestibular tests. Machine learning models capable of expert-level classification could expand access to diagnostic expertise.

Methods We recruited Emergency Department (ED) patients with acute vestibular syndrome who received a final diagnosis of VN or PCS. Data from history, bedside examination and four vestibular tests (videonystagmography, video head impulse test (VHIT), vestibular-evoked myogenic potentials (VEMP) and subjective visual horizontal) were used for model development.

To ensure clinical applicability across EDs with varying neuro-otology resources, we tailored our models for three scenarios, simulated by restricting available data to predefined tiers. Tier 1 represented an ED with neuro-otology support (history, neuro-otological examination, videonystagmography, VHIT, ocular VEMP), Tier 2 an ED with VHIT (history, bedside examination, VHIT) and Tier 3 an ED using only history and bedside examination. Model performance was also compared against HINTS (head impulse, nystagmus, test-of-skew) by experts.

Results Our dataset included 163 VN and 131 PCS patients. The best-performing model in each tier used either the CatBoost or XGBoost algorithms and identified PCS with accuracies of 96.6% (95% CI: 93.3–99.9%), 94.6% (95% CI: 90.5–98.6%) and 88.8% (95% CI: 86.0–91.6%) in Tiers 1, 2 and 3. HINTS achieved 94.6% accuracy.

Conclusion Machine learning models can differentiate PCS from VN with high accuracy and have potential to improve the diagnosis of acute vestibular syndrome for clinicians in EDs with varying neuro-otology expertise and resources.