Differences in Vincristine-Induced Peripheral Neurotoxicity Presentation Between Adults and Children

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Introduction

- Vincristine is a mainstay treatment of haematological cancers for adults and children with vincristine-induced peripheral neurotoxicity (VIPN) being a very common side effect.
- Symptom manifestation may be different between adults and children.
- This study aimed to investigate differences in rates of sensory and motor VIPN in adult and paediatric.

Methods

- Patients were recruited prior to vincristine commencement and assessed at mid-treatment and post-treatment follow-up (Figure 1).
- Sensory and motor neuropathy in adults was graded using patient reported numbness or tingling in hands or feet and weakness in arms or legs (both score range 0-4).
- Neuropathy in children was graded using the clinician-reported sensory and motor Balis scale (range 0-4).

Figure 1. Overview of assessment timepoints

Results

- 20 adults and 27 children were recruited to the study (Table 1).
- By mid-treatment, motor VIPN was more prevalent in children than adults ($\chi2=26.5$ $P<0.001$), with no difference in rate of sensory neuropathy ($P>0.05$). At post-treatment follow-up, motor VIPN was still more prevalent in children than adults ($\chi2=9.8$ $P<0.005$) (Figure 2).
- VIPN was reversible in children, with less motor symptoms at follow-up compared to mid-treatment ($\chi2=12.3$ $P<0.001$) but no significant decrease in adult reports of sensory and motor symptoms ($P>0.05$).

Table 1. Patient demographic information

	Adults	Children
N	20	27
Age (SD)	55.1±15.9	6.1±4.1
Female (%)	40%	59.3%
Total vincristine dose (mg/m^2) (SD)	7.6 (2.1)	11.3 (1.9)
Follow-up months post treatment (SD)	7.6 (5.4)	6.0 (4.5)

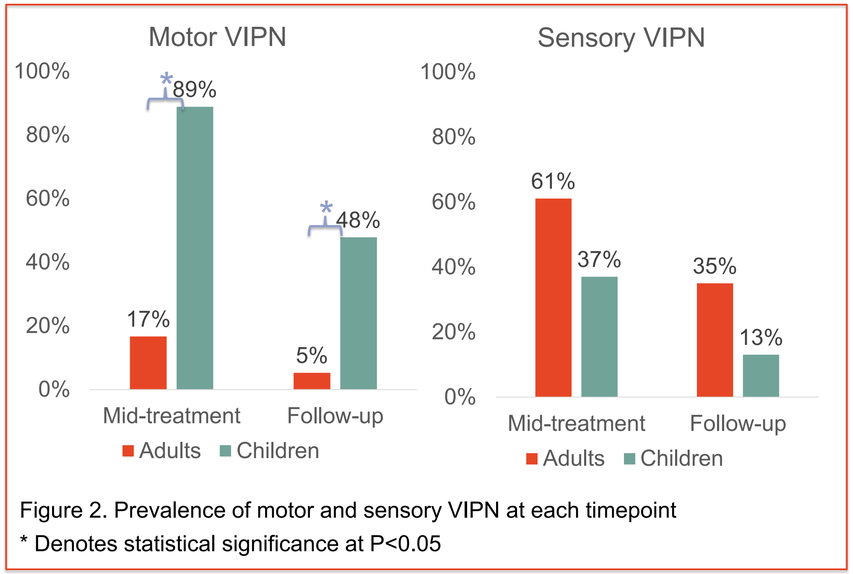

Figure 2. Prevalence of motor and sensory VIPN at each timepoint
* Denotes statistical significance at P<0.05

"Vincristine induces significantly more motor neuropathy in children than adults, with no significant difference in the rate of sensory VIPN"

Conclusions

- VIPN manifests differently between children and adults, with more motor involvement in the paediatric cohort.
- Reasons for this discrepancy may include higher vincristine doses used in the paediatric cohort, or difference mechanism of nerve damage on immature nerves.
- Support and rehabilitation for cancer survivors with VIPN need to be tailored to age and neuropathy impacts.
- Although VIPN may be reversible in children, further studies need to investigate impacts of VIPN on long-term motor development.

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