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MEETING ABSTRACT Open Access

Are lower limb biomechanical factors associated with night-time calf cramps in adults? A case-control study

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Background

Night-time calf muscle cramps are highly prevalent and are associated with reduced quality of sleep and health-related quality of life [1]. The underlying mechanism is poorly understood and no treatment has shown consistent efficacy or safety. The aim of this study was to identify factors associated with night-time calf cramping in adults to explore potential underlying mechanisms and therapeutic targets.

Methods

160 adults were recruited the Greater Newcastle and Central Coast regions of New South Wales, Australia: 80 who experienced night-time calf cramp at least once per week and 80 age- and sex-matched adults who never experienced lower limb muscle cramping. Participants were assessed using reliable tests of foot/ankle and toe strength, range of ankle dorsiflexion, hamstring flexibility, foot alignment, and calf circumference. Participants also completed a bespoke survey examining health and lifestyle factors, exercise, lower limb symptoms and footwear characteristics.

Results

Presence of night-time calf cramps was significantly correlated with weakness of foot and ankle inversion, eversion, dorsiflexion and plantarflexion; weakness of toe grip; restricted hamstring flexibility; lower limb tingling sensations; muscle twitching, and coldness of legs or feet in bed at night. Conditional logistic regression identified three factors independently associated with night-time calf cramps: muscle twitching (OR 4.6; 95%CI: 1.6 to 15.5; p=0.01), lower limb tingling (OR 4.1; 95%CI: 1.6 to 10.3; p=0.003) and foot dorsiflexion weakness (OR 1.02; 95%CI: 1.01 to 1.03; p=0.002), which represented other measures of lower limb weakness in the model.

Conclusion

Night-time calf muscle cramps were associated with markers of neurological dysfunction and potential musculoskeletal therapeutic targets.

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