Gastrocnemius medialis in flexion contracture with osteoarthritis of the knee

Shintarou Kudo¹, Kengo Kawanishi¹, Masashi Kitano², Toyokazu Handa²
¹) Graduate school of health sciences, Morinomiya University of Medical Sciences
²) Yamamuro Clinic

Introduction
Purpose of this study is to clarify the inter-muscular gliding between the gastrocnemius medialis (GM) and the semimembranosus (SM) (GM gliding) in flexion contracture with knee osteoarthritis (OA), and to investigate the effects of both injection-guided ultrasound (US) imaging and physiotherapy.

Methods
Fifty knees of thirty-six OA patients and thirty-nine normal knees of twenty-seven persons were included in this study. GM gliding were assessed in all subjects using US and the extension ROM of the knee were also assessed. Both GM gliding and extension ROM were compared between two groups. In addition, twenty-three knees of seventeen patients were included in an intervention study which involved both physiological saline injection for the fascia of GM guided US (Hydro release) (Kobayashi,2016) and physiotherapy which were consisted both manipulations based on the GM movements which can be observed using US, and eccentric calf raise exercise (Kudo, 2015). Both GM gliding and extension ROM were compared among before therapy, after Hydro release, and after physiotherapy using repeated ANOVA with Bonferroni test (p<0.05).

Results
Both GM gliding and extension ROM of the OA knees were significantly decreased compared to the control group (p<0.05). Both injection and physiotherapy were effective in improving flexion contracture of the knee and GM gliding (p<0.05). And the effect size of the after physiotherapy were larger than that of the after Hydro-release.

Conclusion
GM gliding, which is influenced by the viscosity of the inter-muscular fascia, decreases in knee OA, while Hydro release of inter muscular fascia between GM and SM and physiotherapy increase both GM gliding and extension ROM of the
knee. Inter muscular fascia between GM and SM might be an important factor of the flexor contracture of the knee OA.

References