

Stroke Background

1 Background

1.1 Stoke and Breathing Patterns

Anomalous breathing patterns are often found in stroke patients during sleep. A. Ferrea et al.[4] investigated studies performed during the acute phase of stroke and stated that 59% patients frequently present breathing changes. Bonnin-Vilaplana et al.[1] found that 69% of acute lacunar stroke patients present breathing changes. Stroke can also cause many breathing complications, such as periodic breathing, central neurogenic yyperventilation, apneustic breathing, ataxic breathing and so on[8].

1.2 Stroke and Asymmetric Movement

Patients will present movement disorders after stroke, one of them is movement asymmetry. Patterson KK et al.[7] found that 55.5% participants showed significant temporal temporal gait asymmetry and 33.3% exhibited statistically significant spatial asymmetry. Hodt-Billington et al.[5] found that trunk movement of stroke patients is also asymmetry. Neha Lodha et al.[6] found the increased asymmetry in force produced by hand in stroke group.

1.3 Stroke and Sleeping Position

Millene R. Camilo et al.[3] and Devin L. Brown et al.[2] both stated that supine positioning during sleep is highly frequent after stroke, which is related to sleep apnea.

References

- [1] Marc Bonnin-Vilaplana, Adrià Arboix, Olga Parra, Luis García-Eroles, Josep M Montserrat, and Joan Massons. Sleep-related breathing disorders in acute lacunar stroke. *Journal of neurology*, 256(12):2036, 2009.
- [2] Devin L Brown, Lynda D Lisabeth, Michael J Zupancic, Maryann Concannon, Cory Martin, and Ronald D Chervin. High prevalence of supine sleep in ischemic stroke patients. *Stroke*, 39(9):2511–2514, 2008.
- [3] Millene R Camilo, Regina MF Fernandes, Heidi H Sander, Fernando Nobre, Taiza Santos-Pontelli, Antonio C dos Santos, Draulio B de Araujo, Joao P Leite, and Octavio M Pontes-Neto. Supine sleep and positional sleep apnea after acute ischemic stroke and intracerebral hemorrhage. *Clinics*, 67(12):1357–1360, 2012.
- [4] A Ferre, M Ribó, D Rodriguez-Luna, O Romero, G Sampol, CA Molina, and J Alvarez-Sabin. Strokes and their relationship with sleep and sleep disorders. *Neurología (English Edition)*, 28(2):103–118, 2013.
- [5] Caroline Hodt-Billington, Jorunn L Helbostad, and Rolf Moe-Nilssen. Should trunk movement or footfall parameters quantify gait asymmetry in chronic stroke patients? *Gait & posture*, 27(4):552–558, 2008.
- [6] Neha Lodha, Stephen A Coombes, and James H Cauraugh. Bimanual isometric force control: asymmetry and coordination evidence post stroke. *Clinical Neurophysiology*, 123(4):787–795, 2012.
- [7] Kara K Patterson, Iwona Parafianowicz, Cynthia J Danells, Valerie Closson, Mary C Verrier, W Richard Staines, Sandra E Black, and William E McIlroy. Gait asymmetry in community-ambulating stroke survivors. *Archives of physical medicine and rehabilitation*, 89(2):304–310, 2008.

- [8] Carolyn L Rochester and Vahid Mohsenin. Respiratory complications of stroke. In *Seminars in respiratory and critical care medicine*, volume 23, pages 248–260. Copyright© 2002 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New . . . , 2002.