Swallowing physiotherapy assessment as a predictor of unsuccessful extubation in relation to excess upper airway secretions

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Keywords: Extubation failure; Physiotherapy; Swallowing disorders; Gag reflex

Background.— Extubation failure may result from various causes including swallowing dysfunction. Scarce studies have focused on swallowing evaluation to predict extubation failure. We hypothesized that bedside swallowing assessment before extubation is helpful to identify patients at risk of extubation failure.

Method.— Funded by tender APHP multicenter prospective observational study. All consecutive patients hospitalized in the medical and surgical intensive care units of four university hospitals, intubated and mechanically ventilated for ≥ 6 days were included. Before extubation, the global swallowing pattern (GSP) was evaluated by a physiotherapist including: (1) cervical, oral, labial, and lingual motricity; (2) gag reflexes; (3) swallowing reflexes; (4) volume of pharyngeal secretions. Extubation was decided by the attending physicians blinded to GSP assessment. We investigated predictors of reintubation within the first 72 hours after patient’s extubation in relation to aspiration or excess upper airway secretions.

Results.— One hundred and sixty patients (age: 61 [48–75] [median [25–75% interquartile]], M/F ratio: 1.5, SAPSII: 54 [42–66], duration of mechanical ventilation: 11 days [8–17]) were included. Six patients died. Non-invasive ventilation was used in 39 patients (25%) after extubation. Post-extubation pneumonia was assessed in 10 patients. Twenty-three patients (14.5%) required reintubation, 16 within the first 72 hours with seven (4.4%) in relation to aspiration or excess upper airway secretions. Using a multivariate analysis, normal GSP significantly predicted absence of reintubation within the first 72 hours following extubation in relation to aspiration or excess upper airway secretions (odds ratio 0.42, 95% confidence interval [0.18; 0.99], p = 0.04). Presence of normal right (0.12, [0.03; 0.59]) or left gag reflexes (0.13, [0.03; 0.63]) was significantly associated to absence of reintubation, with a negative predictive value of 0.98. There was a trend for oral motricity assessed by asking the patient to grit teeth to predict the necessity of reintubation (0.22, [0.04; 1.23], p = 0.08).

Conclusion.— Normal GSP as well as presence of one or both gag reflexes is predictive of absence of reintubation in relation to aspiration and excess upper airway secretions. Our high rate of reintubation is probably due to the intubation delay, it will be interesting to perform a study with patient intubated 48 hours at least.

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Discussion
– The current study confirmed the actual relocating effects when using METHOD-1 [1]. However, METHOD-2 increased the effect and decreased the pain perception without applying relocating effects for the scapula-humeral joint.

METHOD-2 seems to have more peripheral effects than relocating role.

References

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Effect of a robot-assisted gait session for patients with decreased knee flexion during swing phase

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Keywords: Tri-dimensional motion analysis; Shoulder; Rotator cuff; Closed chain; Rehabilitation

Introduction.– The main objective of gait training on robot-assisting gait (Lokomat®) is to improve the quality of gait patients (Lampire N et al., 2011). Hemiplegic patients and patients holding total knee arthroplasty (TKA) are two populations with frequent gait disorders, including a deficit of peak knee flexion in swing phase (Péliisser J et al., 1997, McClelland JA et al., 2007). We wanted to objectify the Lokomot® session specific effects in each of these populations.

Method.– A tri-dimensional motion analysis was recorded before and immediately after a Lokomat® training session. The main parameters to analyze were peak knee flexion in swing phase, the spatial and temporal parameters.

Results.– The study is in progress. Currently, 16 subjects with hemiplegia and 8 subjects holding a TKA were included. The peak knee flexion was not significantly improved in the two populations. On hemiplegic patients, Lokomot® training session improves spatial and temporal parameters. None of the parameters were significantly improved in the population of subjects holding a TKA.

Discussion–Conclusion.– The two populations had very different characteristics, one suffering from neuro-motor disorders and the other orthopedic disorders only. We expected an improvement in peak knee flexion in both populations, especially in patients who underwent TKA, free of neuro-motor disorders. In both populations, the peak knee flexion is not improved. For patients undergoing TKA, pain is to take into account and may explain the lack of difference after the Lokomat® session. For hemiplegic patients, improved spatial and temporal parameters showed a change in gait after the session, in connection with the pace with the Lokomat®, but the integration of proprioceptive sensations is not highlighted on one a session: peak knee flexion is not changed. Then it would be interesting to study the quality and quantity of feedback given to the patient during the session.

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Rotator cuff: Rehabilitation in a closed chain, Concept 3 C

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Keywords: Shoulder; Rotator cuff; Closed chain; Innovation; Rehabilitation

Introduction.– A maneuver focusing the glenohumeral active closed chain improves the centering of the glenohumeral joint [1].

– HAS recommends muscular strength training in the rehabilitation of the shoulder (pathology of non-operated rotator cuff) [2].

The combination of these two concepts is the origin of an innovative device: Scapuleo.

Objective.– Evaluation of the effectiveness of the rehabilitation of the shoulder as per the 3 C Concept (Concept of Centering in a Closed Chain).

Material/methods and patients.– Soixante-six shoulders tendinopathy (single, broken and calcifying) of non-operated cuff, reeducated on Scapuleo, according to the 3 C concept.


Excluded: capsulitis, AT, biceps tendinitis, fractures involving the supraspinatus and subscapularis. Means of evaluation:
– calculation of the Constant-Murley score weighted initial (SCPI) and final value (SCPF);
– rehabilitation protocol: the 3 C Concept includes:
– an active-rehabilitation with Scapuleo (20 minutes): painless overall work, pushing and/or pulling in a closed chain, alternating with rest and hand on the thigh;
– passive mobilization (5–10 minutes) of the shoulder and muscle easing (aductor, posterior cuff .) and if necessary a treatment of contractures (Jones, myotendinous).

Duration: On average 19 sessions (15 weeks).

Results.– On average, the SCP increases from 69% to 96%.

For the 28 most injured shoulders with the SCP increases from 48 to 84% after 21 sessions (12–40):
– 53 patients were interviewed (SCPI 72%, SCPF 98%) 12 months (6–18) after the end of treatment.

Stability for 48 patients (90%).

Pain-Average: 1.6/10 (0 for 29 patients).

– five had another treatment, one self-rehabilitates.

Discussion.– Rehabilitation of the shoulder in closed chain, according to the Concept 3 C improves sustain the Constant-Murley score.

Subacromial impingement syndrome and pain are reduced. Anatomical and physiological explanations are identical to those of the maneuver [1].

Randomised controlled studies should confirm these preliminary results.

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