Current aspects of assessment and treatment of dysphagia
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Aim and scope of this thesis
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The aim and scope of this thesis is to explore current questions and aspects in the assessment and treatment of dysphagia. Therefore the main text of this thesis is divided into three sections:

Section II: Physiology of (normal) swallowing (Chapter 3);
Section III: Assessment of swallowing disorders (Chapters 4-5);
Section IV: Treatment of swallowing disorders (Chapters 7-9).

In this chapter, each section will be introduced shortly. An introduction will be given on the various research questions which are presented in several scientific papers. These papers are the body of this thesis and are presented in Chapters 3 to 9. Section V contains a general summary of this thesis.

Section II: Physiology of (normal) swallowing

The residual amount of food or drink in the pharynx after swallowing (pharyngeal residue) is an important parameter for diagnostic procedures in the treatment of swallowing disorders. Few attempts have been made to quantify pharyngeal residues in normal and dysphagic populations, mainly due to the limited availability of appropriate diagnostic tools. Scintigraphy with Technetium-99m labelled colloid allows quantitative measurement. In Chapter 3 we explore the influence of viscosity on pharyngeal residue in normal healthy volunteers, hypothesizing that swallowing more viscous products would result in an increase in pharyngeal residue.

Section III: Assessment of dysphagia

Dysphagia can have severe consequences on the Quality of Life of patients. In 2000 the “SWAL-QoL” was developed: a patient based, dysphagia-specific tool to evaluate the impact of dysphagia on the quality of life in patients with dysphagia. Since the first publication in 2000 in Dysphagia1,2, SWAL-QoL has shown to be the “gold standard” in dysphagia research regarding quality-of-life issues in patients with dysphagia. In Chapter 4 we therefore translated the SWAL-QoL into Dutch language (SWAL-QoL-NL)
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performed a validation of SWAL-QoL in order to provide a clinimetrically valid tool for assessing the patients’ perspectives in dysphagia treatment in the Netherlands.

Although the assessment of dysphagia by speech-pathologists has been evaluated in other patient groups (i.e. stroke patients or head-and-neck cancer patients), so far no attempts have been made to determine the validity of this clinical assessment in patients with multiple sclerosis and dysphagia. Chapter 5 focuses on the validity of clinical factors of a standard speech-pathology examination of swallowing problems in patients with severe multiple sclerosis. For this patient group, an comparison is made between speech pathology examination and an instrumental examination (which is considered to be a superior standard in dysphagia assessment).

Section IV: Treatment of dysphagia

Swallowing therapy can be provided in an acute setting (hospital) or in rehabilitation centres, nursing homes and private practises. The therapy will normally consist of exercises aimed to improve the function of certain muscle groups. In this section we evaluate two novel adjuncts to this treatment: (1) the use of surface electromyography (sEMG) as a biofeedback tool and (2) the use of neuromuscular electrostimulation (NMES).

The rationale of biofeedback is that, in addition to feeling a muscle contraction, a patient can also observe his muscle activity. The patient will be able to contract his muscles fiercer and longer and this may allow for a faster muscle training. The use of sEMG biofeedback has proven to be effective in other professions and patient groups\(^5\)\(^-\)\(^4\). In Chapter 6 we present data on a series of dysphagic patients who were treated in our hospital with the help of sEMG biofeedback. As current studies, including our own, on swallowing rehabilitation and sEMG are relatively small in terms of sample size, no definitive conclusions on efficacy can be drawn. Therefore, in Chapter 7 we conducted a systematic review to detect and compare all relevant studies, in order to assess the quality of published articles on this topic and to investigate whether the use of sEMG biofeedback is effective in dysphagic stroke patients.
Neuromuscular electrostimulation (NMES) is a form of muscle stimulation frequently used in physiotherapy to strengthen healthy muscles (like in sports training) or to prevent atrophy in patients. Good therapy outcomes are reported in cases where electrostimulation is combined with active exercises. Since its introduction as an adjunct to swallowing therapy, NMES has been marketed intensively, although questions persist about the physiological rationale underlying this treatment modality. This has made the use of NMES in the treatment of dysphagia rather controversial. We hypothesized that this type of motor stimulation might be effective in patients with dysphagia and in Chapter 8 a study is presented on the possible effects of NMES on swallowing in patients with multiple sclerosis.

Chapter 9 analyzes the recent literature on NMES in dysphagia treatment. Critical appraisal identifies a diversity of treatment parameters, which may be a confounder for the different outcomes in these studies.
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References