Nutrition in stroke patients and chronic surgical diseases

*K. Boeykens (BE)*
Nutrition in Stroke Patients and Chronic Neurological Diseases

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Thrombotic Stroke

- Blood clot (thrombus) blocks flow of blood in brain.

Embolic Stroke

- Fatty plaque or blood clot (embolism) breaks away and flows to brain where it blocks an artery.

Cerebral Hemorrhage

- Break in blood vessel (aneurysm) in brain.

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Chronic neurological diseases

Amyotrophic Lateral Sclerosis

Dementia (Alzheimer)

Parkinson

Myasthenia gravis

Huntington

Multiple Sclerosis
Risk of malnutrition?

- Poor nutritional intake
  - Dysphagia: 30-50% acute stage, 10% > 6 m
    - + risk aspiration pneumonia
  - Reduced conscious level
  - Poor mobility (immobility)/disability
- Dehydration
- Colonization oropharynx (pathogenic bact.)
- Depression
- Side-effects drugs
Does nutrition therapy affects outcome in patients after a stroke?

If Yes?

Who, When and How?

METHODS

Design: 2 randomised controlled trials with similar designs (FOOD [Feed Or Ordinary Diet] trials).

Allocation: concealed.

Blinding: blinded {data collectors and outcome assessors}.

Follow up period: 6 months.

Setting: 83 hospitals in 15 countries (study 1) and 47 hospitals in 11 countries (study 2).
Question 1


NO
Question 2 + 3


**Timing:**
- Early tube feeding vs
- Only IV fluids for the first seven days.

**Method:**
- Early PEG vs
- NG tube before 4th day
Method

NG tube
- (Frequent) replacement
- Less tolerated (discomfort)
- Less food delivered vs prescribed
- Tube misplacement/dislocation

PEG
- Minor complications
  - Site-infection
- Major complications
  - Aspiration during placement
  - Peritonitis
Do nasogastric tubes worsen dysphagia in patients with acute stroke?
Rainer Dziewas*, Tobias Warnecke†, Christina Hamacher, Stefan Oelenberg, Inga Teismann, Christopher Kraemer, Martin Ritter, Erich B Ringelstein and Wolf R Schaebitz

Abstract

Background: Early feeding via a nasogastric tube (NGT) is recommended as safe way of supplying nutrition in patients with acute dysphagic stroke. However, preliminary evidence suggests that NGTs themselves may interfere with swallowing physiology. In the present study we therefore investigated the impact of NGTs on swallowing function in acute stroke patients.

Methods: In the first part of the study the incidence and consequences of pharyngeal misplacement of NGTs were examined in 100 stroke patients by fiberoptic endoscopic evaluation of swallowing (FEES). In the second part, the effect of correctly placed NGTs on swallowing function was evaluated by serially examining 25 individual patients with and without a NGT in place.

Results: A correctly placed NGT did not cause a worsening of stroke-related dysphagia. Except for two cases, in which swallowing material got stuck to the NGT and penetrated into the laryngeal vestibule after the swallow, no changes of the amount of penetration and aspiration were noted with the NGT in place as compared to the no-tube condition. Pharyngeal misplacement of the NGT was identified in 5 of 100 patients. All these patients showed worsening of dysphagia caused by the malpositioned NGT with an increase of pre-, intra-, and postdeglutitive penetration.

Conclusion: Based on these findings, there are no principle obstacles to start limited and supervised oral feeding in stroke patients with a NGT in place.
Question 2 + 3

### Conclusions

#### Timing and method of enteral tube feeding (ETF) in stroke and dysphagia*

<table>
<thead>
<tr>
<th>Study</th>
<th>Comparisons</th>
<th>Outcomes at 6 mo</th>
<th>Event rates</th>
<th>RRR (95% CI)</th>
<th>NNT</th>
<th>RRI (CI)</th>
<th>NNH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Early initiation of ETF v no ETF for ≥7 d</td>
<td>Death</td>
<td>42% v 48%</td>
<td>12% (−2 to 24)</td>
<td>Not significant</td>
<td>Not significant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Death or poor outcome</td>
<td>79% v 80%</td>
<td>1% (−5 to 8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ETF by PEG v ETF by NG tube</td>
<td>Death</td>
<td>49% v 48%</td>
<td>2% (−19 to 28)</td>
<td>Not significant</td>
<td>Not significant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Death or poor outcome</td>
<td>89% v 81%</td>
<td>10% (−1 to 21)</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

*PEG = percutaneous endoscopic gastrostomy; NG = nasogastric. Other abbreviations defined in glossary; RRR, RRI, NNT, NNH, and CI calculated from data in article.
Remarks

Lack of essential nutritional data:

- No standardised method of nutritional screening/assessment at admission
  - Which patients were really undernourished?
- In the group of OS only 8% were undernourished
- No monitoring of nutritional intake/changes
- Compliance with oral supplements?
- How much EF patients got?
Remarks

• Patients were only included in the group of early TF when the attending physician was unsure about the adequate nutrition therapy.
  • How many patients who had an indication for early TF and did not enter the group?
  • (Tendency for less mortality in the early TF group)
30 patients met serious dysphagia 14 days post CVA

Control group: NG (n = 14)
Intervention group: PEG (n = 16)

Results?

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>NG</th>
<th>PEG</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality &gt; 6 wks</td>
<td>57%</td>
<td>12%</td>
<td>Sign.</td>
</tr>
<tr>
<td>Discharge &lt; 6 wks</td>
<td>0/14</td>
<td>6/16</td>
<td>Sign.</td>
</tr>
<tr>
<td>Albumin</td>
<td>▼</td>
<td>▲</td>
<td>Sign.</td>
</tr>
<tr>
<td>Stop EF (treatment failure)</td>
<td>3/14</td>
<td>0/16</td>
<td></td>
</tr>
<tr>
<td>EF: Delivered vs prescribed</td>
<td>78%</td>
<td>100%</td>
<td>Sign.</td>
</tr>
</tbody>
</table>
In geriatric patients with **neurological dysphagia** prefer percutaneous endoscopic gastrostomy (PEG) to nasogastric tubes (NGT) for long-term nutritional support, since it is associated with less treatment failures and better nutritional status.

Use a PEG tube if EN is anticipated for longer than 4 weeks.
Ketogenic diet, calorie (CH) restriction, exogenous ketone bodies for a short time period

- Ketone bodies increase global cerebral bloodflow and could protect brain from further neuronal damage and improve function.
Prospective observational cohort (n = 919)

- Greater motor and cognitive improvements, even in patients with the most severe strokes
Prospective observational cohort (n = 830)

What results in better stroke rehabilitation outcomes?

- Earlier rehabilitation admission
- Higher-level activities early in the rehabilitation process
- Newer medications
- Tube feeding
Nutrition care pathway

• Screening/Assessment of nutritional status (upon admission and periodically)
  • Appetite
  • Intake
  • Weight loss
  • Dependency/positioning of the patient
• Assessment of swallowing
  • Impaired: swallowing rehabilitation programme
• Hydration and nutritional therapy
• Oral hygiene/care (= comfort!)
Nutrition plan
Case by case MD decision:
• (Severe) dysphagia or not?
• Malnutrition or not?
• Severe stroke or not?
  • Timing and grade of expected recovery (of adequate nutritional intake?)
• Food records: assessment of intake
• Benefits/burden of NG-tube/PEG?
• QoL?
Guideline clinical nutrition in patients with stroke

Rainer Wirth¹,², Christine Smoliner¹, Martin Jäger³, Tobias Warnecke⁴, Andreas H Leischker⁵, Rainer Dziewas⁴ and The DGEM Steering Committee*

- German Society of Clinical Nutrition
- German Society for Neurology
- German Geriatric Society
Screening/assessment

1. All stroke patients should be screened for nutritional risk within the first days after hospital admission.

2. A formalized screening for dysphagia should be performed (as early as possible) in all stroke patients (B).
Oral supplements

3. Stroke patients, who are able to eat and who have been identified
   • to be at risk of malnutrition
   • who are malnourished
   • or who are at risk for pressure sores
should receive oral nutritional supplements (B).
4. If a sufficient oral food intake is not possible during the acute phase of stroke, enteral nutrition shall be preferably given via a nasogastric tube (A).

5. If a nasogastric tube is repeatedly removed accidentally by the patient and if artificial nutrition will probably be necessary for more than 14 days, early placement of a PEG should be considered. A nasal loop (bridle) is an effective alternative in this situation (B).
Tube feeding

6. Patients with prolonged severe dysphagia anticipated to last for more than 7 days should receive tube feeding preferably starting in the first weeks by a NG-tube.

7. If enteral feeding is likely for a longer period of time (> 28 days), a PEG should be chosen and shall be placed in a stable clinical phase (after 14 – 28 days) (A).
8. The majority of conscious dysphagic stroke patients with tube feeding should have additional oral intake, according to the kind and severity of dysphagia (B).

9. Nasogastric tube feeding does not interfere with swallowing training. Therefore, dysphagia therapy shall start as early as possible also in tube-fed patients (A).
10. Patients with a decreased level of consciousness and mechanical ventilation often require enteral nutrition for a longer period of time and tube feeding can therefore start early (C).

11. Mechanically ventilated stroke patients in whom prolonged artificial nutrition (> 14 days) is probable, should receive a PEG at an early stage (B).
Ethical considerations?

- Sometimes whether, when and how to feed remains difficult to answer?
- Field of tension between nutrition as a medical intervention or basic care.
- Field of tension regarding QoL in a dependent state vs post stroke.
- Some patients not able to communicate
Ethical considerations

- Indicators of poor prognosis after stroke:
  - Advanced age
  - Severity of stroke
  - Elevated blood pressure
  - Early onset of seizures in ischaemic stroke or status epilepticus
Who will benefit?

- Clinically assisted nutrition and hydration are considered medical treatments within law and therefore can be withheld or withdrawn if considered to be of no benefit for the patient.
  - Expected outcome with or without clinically assisted feeding and hydration
  - The risks associated with NG tube feeding
  - The risks associated with insertion and maintenance of PEG-tubes
Important issues

- Provide information in a consistent and clear manner:
  - To the MD team and the patient/family or caregivers
- Try to define clear objectives or goals
- Where there is doubt or lack of consensus surrounding the benefits of supporting nutrition and hydration, a time-limited trial of clinically assisted feeding can be considered.
- Monitor closely for potential for adverse effects such as tube displacement, gastrointestinal intolerance, reflux and metabolic complications
Important issues

- Continued removal of the nasogastric tube by the patient may be interpreted as refusal but is likely to be an unreliable indicator of non-consent.
- As the patient’s condition deteriorates, it may be appropriate to discontinue clinically assisted nutrition. Hydration may also be withdrawn as this can lead to pulmonary oedema and increased secretions which add to the burden for the patient.
- Rigorous oral hygiene is a very important intervention.
Chronic neurological diseases

- Amyotrophic Lateral Sclerosis
- Dementia (Alzheimer)
- Parkinson
- Multiple Sclerosis
- Myasthenia gravis
- Huntington
Dysphagia

- Myasthenia gravis: up to 40%
- Alzheimer: up to 84%
- Parkinson: up to 50-82% (end-stage)
- ALS: 10-30% and 100% (end-stage)
- MS: up to 44% (during relaps)

LLL-ESPEN: Nutrition in neurological diseases
Dysphagia

- Modification of the diet
Presentation
Weight Loss in Alzheimer

- Often in early stadium of the disease
- > 40% of patients
- Risk of weight loss (> 5%) doubles vs control group and correlation with severity and duration of the disease
- Weight loss = predictor mortality and institutionalization

Am J Clin Nutr 2000-2005
Etiology

- Less awareness: when lunch time?
- Amnesia: Did I have a meal or not?
- Apraxia: (Greek praxis = work): prepare a meal
- Agnosia: ‘ignorance’ (ability to recognize food)
- Apathia: lack of interest in (preparing) food
- Ageusia: lost of taste functions
- Delusions: ‘I don’t have enough money to buy food’
- Anosognosia: ‘without disease knowledge’ (I don’t need help to cook)
Possible solutions

- Energy dense food-low volume
- Meals on wheels
- Variation
- Make food/drinks visible
- Eating together
- Natural daylight
- Mirtazepine 30 mg/day
End-of-life Care for People with Dementia in Residential Care Settings

1. Aggressive medical treatment for residents with advanced dementia is often inappropriate for medical reasons, has a low rate of success, and can have negative outcomes that hasten functional decline and death.

- Tube feeding in residents with advanced dementia does not increase survival. It does not prevent aspiration pneumonia, malnutrition or pressure ulcers. It does not reduce the risk of infections or improve functional status or comfort of the patient.
2. Quality palliative care is an effective alternative to aggressive treatment and is closely related to staffing and training in nursing homes.

- Simple strategies involving hands-on care by well-trained staff – such as massage, oral hygiene, changes in diet, and hand-feeding – can prevent infection and manage feeding problems without resort to tube-feeding.
Physicians overestimate prognosis in persons with advanced dementia and have unrealistic expectations about the effectiveness of feeding tubes. A minority discusses end-of-life care with families and even fewer provide any advance care planning. When end-of-life care is discussed, it does not often include issues about treatment of infection and tube-feeding.
QUALITY OF LIFE

"The data show that when doctors have honest conversations with patients who are seriously ill, the quality of remaining life for patients and their families is far better."

—Thomas J. Smith, MD
Questions?

Let's not forget why we're here. Too late.