

ENTERAL FEEDING FOLLOWING STROKE

Stroke is a major cause of morbidity and mortality in the UK and the third major cause of death accounting for 11% (1). Most people survive a first stroke, but are often left with significant morbidity and/or physical or cognitive deficits.



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MALNUTRITION FOLLOWING STROKE

Estimates vary from six to 60 percent of patients showing signs of malnutrition following stroke, variance depending on the criteria used to identify malnutrition (2). It is well recognised that malnutrition is an independent risk factor for increased morbidity, poorer outcomes and mortality after a stroke (3-6).

The risk of malnutrition in stroke patients varies, but it is recognised that nutritional status can worsen during admission and that undernutrition following admission is associated with increased case fatality and poor functional status at six months (7). It is important to assess beyond swallowing problems and poor intake and look thoroughly at the mechanics of 'plate to mouth' and the entire meal process, to ensure that the impact of any residual deficits is minimised.

NUTRITIONAL SCREENING

Screening of all patients should ideally be carried out within 48 hours of admission to hospital (8) and repeated regularly throughout the episode of care. It should also direct referral to a dietitian for assessment and management of nutritional risk.

Malnutrition occurs in approximately 15 percent of all patients admitted to hospital, increasing to approximately 30 percent within the first week. It carries with it a strong association with poorer functional outcome and slower rate of recovery (9).

In addition, SIGN 78 (10) recommends that a nutritional screening tool for use in stroke patients should focus on the effects of stroke on nutritional status, e.g. presence of dysphagia and ability to eat, rather than solely focusing on pre-existing nutritional status.

NUTRITIONAL ASSESSMENT AND REQUIREMENTS

It is unclear to what extent hypermetabolism and hypercatabolism occur post-stroke, with estimations for the increase in metabolic rate following stroke ranging from 10 percent up to 50 percent, (11) depending on the severity and clinical consequences of the stroke, and clinical judgement is required when estimating the increase in resting energy expenditure.

Catabolic effects vary according to the individual, but usually persist for the first few weeks, then begin to resolve in the following weeks and months. Nutritional assessment and estimation of requirements commonly are based on predictive equations such as Henry (2005) (12).

MANAGEMENT OF DYSPHAGIA FOLLOWING STROKE:

Dysphagia, is a common and clinically significant complication following stroke (6) which can result in aspiration. The presence of aspiration is associated with an increased risk of developing an aspiration pneumonia and other broncho-pulmonary infections (3).

Both NICE 2004 and SIGN 78 recommend that, following acute stroke, all patients should be screened for dysphagia by an appropriately trained healthcare professional before being given food, drink or medication.

NICE 2008 (14) recommends that, if the admission screen indicates a swallowing problem, then a specialist assessment should take place within 72 hours of admission. ▶

Both Marion and Shubha have a longstanding interest in all aspects of Neuro-rehabilitation and have worked in the field for over 10 years.

ENTERAL FEEDING FOLLOWING STROKE

Effective management of dysphagia is of key importance following stroke, in order to prevent undernutrition and dehydration from occurring, as far as possible. This must involve multidisciplinary working and good communication between involved practitioners. Once a full assessment of dysphagia by a speech and language therapist has taken place, the appropriate route of feeding can be identified, making it more attainable to meet nutrition and hydration requirements.

The route of feeding initially is often a combination of oral and enteral feeding, and the management of each transition through the different stages of this spectrum is a crucial part of effective dysphagia management.

ENTERAL NUTRITION

Nutritional intervention following stroke can often involve enteral feeding in patients who are unable to meet their requirements safely or consistently via oral diet and fluids, and for some patients, oral intake is contraindicated completely.

Contraindications to enteral nutrition are patient refusal, patients with a non-functioning GI tract and where it is inappropriate to feed for ethical reasons (16). Enteral feeding in stroke tends to focus on nasogastric and gastrostomy feeding, both of which are used in patients unable to meet their requirements, or who are at risk of disease-related malnutrition.

ETHICAL CONSIDERATIONS IN ENTERALLY FED PATIENTS

The complexities of enteral feeding and insertion of enteral feeding tubes should lead us to concentrate more closely on the decision to feed in the first instance and the ethical considerations surrounding the initiation of feeding in stroke patients as an intervention. However, particularly in this patient group, this is a complex and multifactorial decision, as many of the functional measures that are initially impaired can improve, but at very different rates in each individual, thus making it hard to predict how each patient will progress. Each patient's capacity to contribute to this decision needs to be assessed and, if not deemed able to consent, then additional measures should be put in place regarding consent and capacity to do so.

Enteral nutrition is regarded as an aspect of

medical treatment and it is recommended that in cases where the benefits of nutrition support are uncertain, a 'time-limited' trial should be undertaken (14). Whilst it is important to avoid nutritional status deteriorating in the acute phase of stroke, the decision to feed severely disabled patients, with little prospect of neurological recovery is difficult, and all aspects of survival need to be taken into account. This needs to be a medical decision and any previously expressed wishes, e.g. living will or advanced directive, should be adhered to.

HYDRATION

Fluid intake in stroke patients is of key importance and may need to be supplemented if unable to be met orally, most commonly by subcutaneous or intravenous fluids in the acute phase of treatment. Once an alternative feeding route is established, most likely nasogastric tube in the acute phase, this can serve a dual purpose of providing nutrition and hydration and should be the route of choice for meeting an individual's requirements until oral intake of food and fluids improves.

Many factors can make risk of dehydration in stroke patients more likely, such as decreased sense of thirst, fear of incontinence, inadequate intake of thickened fluids required to meet requirements, inability to self-feed and communication difficulties, e.g. difficulties in expressing thirst or need for a drink to carers. Again, with good observation of patients at ward level, coupled with robust assessment measures, these risks can be managed, thus decreasing the likelihood of dehydration occurring.

NASOGASTRIC (NG) FEEDING

Tube placement involves a fine-bore NG tube being inserted trans-nasally into the stomach. The tubes are usually between 8.0-10mm French Gauge, made from polyurethane, PVC or silicone. NG feeding is ideal in the acute setting, for patients who require short-term feeding, identified as less than four weeks (17). It can be used longer term if other options such as gastrostomy feeding are contraindicated or not appropriate (18).

The position of the tube should be confirmed by aspiration of stomach contents and checking that the pH of aspirate is <5.5, indicating gastric contents, as per the National Patient Safety Agen-

cy Guidelines from 2005 (19). The position of a NG tube should be confirmed before each use by aspiration of stomach contents, and radiological confirmation should only be used when there is ongoing difficulty in obtaining aspirate, or concern regarding the tube position that cannot be otherwise resolved.

Consent should be obtained for placement of all feeding tubes, and this can prove difficult in stroke patients (and in other neurological conditions) as there may be cognitive impairment and significant communication difficulties, along with confusion and poor understanding, particularly immediately post stroke. Medical staff usually take responsibility for obtaining consent for procedures that are considered invasive, or identifying when patients do not have the capacity to consent, and putting alternative arrangements for procedures to take place, such as per the guidance for consent and capacity from the British Medical Association in England and Wales, or the Adults with Incapacity Act in Scotland.

Results from the FOOD Trial indicated that early enteral feeding, clarified as within seven days, may reduce mortality and that dysphagic stroke patients should be offered enteral feeding via nasogastric tube within the first few days of admission. However, it also identified worse quality of life in patients who are allocated early tube feeding, concluding that early feeding may keep patients alive, but in a severely disabled state when they would otherwise have died (20). The RCP Stroke Guidelines go a step further, indicating that patients should be fed within the first 24 hours, based on the recommendations of the FOOD Trial and the observed reduction in mortality, with further consultation with patient representatives regarding the timing of initiation of feeding for maximum benefit.

NASAL BRIDLE (NB) TUBE RETAINING DEVICES

Nasal bridles are enteral feeding tube retaining devices that are increasing in use in patients who repeatedly displace nasogastric tubes, e.g. in patients who are confused following stroke. The use of NB loop has been shown to have few complications and minimal discomfort for the patients, and in one prospective study, showed a reduction in 30-day gastrostomy mortality, in part due to better selection of patients for gas-

trostomy, and also that bridle loops allowed patients an average 10 days of nutrition prior to either recovery or gastrostomy placement. (21) The NICE Guideline for management of acute stroke (14) endorses the consideration of using nasal bridle tubes in stroke patients who are unable to tolerate a NG tube.

GASTROSTOMY FEEDING

Gastrostomy feeding is generally used for patients who require longer-term nutritional support, usually identified as more than four weeks (14). Gastrostomy tubes are placed directly into the stomach, either endoscopically, surgically, or radiologically, and each patient should be fully assessed prior to placement to ensure that there are no contraindications to placement, e.g. previous abdominal surgery, and that placement is appropriate.

Previously, a number of studies comparing nasogastric to gastrostomy feeding showed that there was better success in the administration of feed, less interruption to feeding regimen and lower risk of aspiration with gastrostomy feeding. As a result, patients were more consistently hydrated and fed and nutritional status improved and, with it, many of the functional measures associated with poor nutrition, such as increased frequency of infection, increased risk of pressure areas, depression, loss of muscle mass, etc.

However, the FOOD Trial (20) found that there were no clinically significant benefits of gastrostomy feeding compared to nasogastric feeding and also found a reduction in poor outcomes with NG feeding. The recommendation from this was to use NG feeding initially for the first two to three weeks post stroke, unless there was a clear practical reason to use gastrostomy. An additional finding of interest was that the gastrostomy group had a higher rate of pressure sores, which raised the possibility that these patients may move less or be nursed differently.

Poor outcome following gastrostomy insertion, as concluded by the FOOD Trial, must consider that patient selection is a factor, as those requiring gastrostomy are patients with poor nutritional intake and status and the poorest prognosis. This links in with the finding that, although early enteral feeding is recommended and does not cause any harm, this can keep patients alive but in a severely disabled state where they would ▶

otherwise have died, i.e. survival itself does not equate to survival with good outcome.

The commonly used terminology of Percutaneous Endoscopic Gastrostomy (PEG) and Radiologically Inserted Gastrostomy (RIG) refer to the methods of placement, not type of tube. Tubes are more commonly identified as Balloon-Retained and Non-Balloon Retained, and the type of tube and method of placement vary depending on the individual, and which method is most suitable. Surgical gastrostomy can be placed in patients who have failed to tolerate both PEG and RIG procedures.

There are various potential complications of gastrostomy tube insertion ranging from minor complications such as cellulitis and localised skin infection, to more major complications such as infectious peritonitis or buried bumper syndrome.

MEDICATION ADMINISTRATION

Administration of medications is often necessary in stroke patients, due to dysphagia or Nil by Mouth status. Careful guidance should be sought regarding method and timing of administration,

along with any drug-nutrient interactions with feed products (22, 23). Administering each medication separately and flushing the feeding tube with 10mls water in between each medication is considered to be good practice.

GUIDANCE ON MONITORING

Monitoring of patients on enteral feeding should be multidisciplinary, depending on the health-care professionals involved in that individual's care. Anthropometric and biochemical markers are essential and useful, along with clinical judgement regarding the medical stability of the patient (24, 25)

DISCHARGE PLANNING

It is essential that good practice is established in terms of coordination of discharge from hospital for patients on enteral feeding. Training and support for patients, carers and relatives on all aspects of feeding and ongoing tube care is critical, and it is essential that it is delivered in a timely fashion, with information provided in the most suitable medium for each patient and their carers.

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