Malnutrition in COPD: meeting patients’ nutritional needs

Matthew Hodson and Samantha Blamires explore how nutritional screening and appropriate management of malnutrition can improve outcomes for patients with COPD.

Chronic obstructive pulmonary disease (COPD) is an umbrella term for a number of lung diseases, including emphysema and chronic bronchitis. There are an estimated three million people living with the condition in the UK, however only 900,000 are currently diagnosed (National Institute for Health and Care Excellence [NICE], 2010). COPD is a major cause of morbidity and mortality, accounting for more than 28,000 deaths, 130,000 emergency admissions and 1.4 million GP consultations every year (NICE, 2010). Weight loss and being underweight are associated with poor prognosis and increased mortality, independent of disease severity (Ezzell et al, 2000), yet malnutrition is largely under-recognised and undertreated.

PREVALENCE OF MALNUTRITION

The term malnutrition refers to both over- and undernutrition, and is defined as an imbalance of energy, protein and nutrients which cause measurable adverse effects on body form, function and clinical outcome (Brotherton et al, 2012). Patients with COPD can experience malnutrition in the form of both under- and overnutrition. However, for the purposes of this feature, malnutrition refers to the problem of undernutrition. Malnutrition is common among COPD patients, with an estimated 30–60% of inpatients and 10–45% of outpatients thought to be at risk (Stratton et al, 2003).

CONSEQUENCES OF MALNUTRITION

Malnutrition has been linked to poor outcomes, with body weight and body mass index (BMI) identified as independent risk factors for mortality in patients with COPD (Ezzell et al, 2000). Those at risk of malnutrition have a higher risk of being admitted to hospital and requiring a longer length of stay (Collins et al, 2010). Poor nutritional status is further associated with adverse effects, such as decreased muscle strength (including those required for breathing), more rapid deterioration in lung function, and a decrease in exercise capacity, all of which contribute to:

- Increased complications
- Increased use of healthcare services

Thus, clinicians need to understand the importance of good nutrition and identify and manage malnutrition appropriately.

IMPACT OF COPD ON NUTRITIONAL STATUS

Energy

The resting energy expenditure of patients with COPD is reported to be 15–20% above normal. This, combined with a decreased oral intake, puts patients at increasing risk of malnutrition (Ezzell et al, 2000). Symptoms such as difficulty swallowing or chewing due to dyspnoea (shortness of breath); chronic ‘mouth breathing’; chronic mucous production; coughing; depression; and fatigue can all contribute to a poor nutritional intake in this patient group (Gandy, 2014).

Protein

Proteins are the body’s building blocks, essential for growth, repair, and immunity. They help to maintain muscle mass, including those required for breathing, and it is therefore important to ensure that patients consume adequate protein. Current guidelines recommend a daily protein intake of at least 1.5g/kg body weight to allow for optimal protein synthesis (Ferreira, 2008). When feasible, patients should also be encouraged to participate in an exercise programme to stimulate the anabolic response, e.g. pulmonary rehabilitation (Ferreira, 2008).

Micronutrients

Micronutrient (vitamins and minerals) intake is likely to be compromised in individuals who have a diet deficient in energy and protein. Micronutrients are important to help regulate numerous body processes and are essential in the body for the optimal use of macronutrients (protein, fat and carbohydrate). Any form of nutritional support should consider the provision of adequate micronutrients (Gandy, 2014).
SCREENING

Malnutrition in COPD can present as a low BMI (<20 kg/m²), a reduction in lean body mass and/or unintentional weight loss. Current guidelines published by NICE (2010), the Department of Health (DH, 2010) and the Care Quality Commission (CQC, 2010) recognise the value of screening for malnutrition in COPD. Managing Adult Malnutrition in the Community (Brotherton et al, 2012; Figure 1), provides a practical pathway to support healthcare professionals in primary care to identify and manage individuals at risk of disease-related malnutrition. The pathway begins with nutritional screening using the ‘Malnutrition Universal Screening Tool’ (‘MUST’) — a validated tool for use in all care settings, which calculates a malnutrition risk score based on the assessment of BMI and percentage of unintentional weight loss in the last 3–6 months.

The NICE clinical guideline for COPD (2010) recommends:
- BMI should be calculated
- If BMI is abnormal (high or low), or changing over time, the patient should be referred for dietetic advice
- If BMI is low (<20kg/m²) patients should be given oral nutritional supplements (ONS) to increase their total calorific intake and be encouraged to take exercise to augment the effects of ONS.

It is important to consider that BMI may be less reliable as an index of nutritional status in older patients because of age-related changes in height, posture and ratio of fat to muscle (NICE, 2010). In these patients, changes in weight, particularly if greater than 3kg, should be noted and acted upon (NICE, 2010).

MANAGEMENT OF MALNUTRITION

When identified as ‘at risk of malnutrition’, nutritional goals should be agreed with patients and appropriate steps taken to support their nutritional status. Until recently, weight loss was thought to be an inevitable part of the disease process, however we now know that weight loss can be reversed in patients with COPD (Collins, 2013). Weight gain of 2kg has been associated with a number of functional improvements, and it is therefore recommended that this level of weight gain is used as a therapeutic target (Collins et al, 2013).

NICE (2006) recommends the use of various nutrition support strategies to improve dietary intake, including dietary counselling, food fortification and ONS, otherwise known as sip feeds. Many patients with COPD struggle to consume the volume of food required to meet their nutritional requirements and therefore NICE (2010) recommends that patients with a low BMI (<20kg/m²) receive ONS to support their nutritional intake. ONS are a balanced mix of energy, protein and micronutrients, which typically contain approximately 300kcal per bottle. They are designed to be taken in addition to normal dietary intake and are ideal for use in patients with COPD who have a poor appetite, as they improve total nutritional intake with little suppression of voluntary food intake (Stratton and Elia, 2007).

ONS have been shown to significantly improve outcomes including quality of life, exercise performance, respiratory muscle strength and hand-grip strength (Collins et al, 2012; Ferreira et al, 2012; Collins et al, 2013). Additionally, they have been associated with a 22% decreased length of hospital stay, 13% reduction in hospitalisation costs and a 13% decrease in the probability of 30-day hospital readmission (Snider et al, 2015).

CONCLUSION

Healthcare professionals working with patients with COPD acknowledge that they often find it difficult to provide nutritional support (Association of Respiratory Nurse Specialists [ARNS], 2010). With World COPD Day highlighting the condition, it is timely that clinicians should familiarise themselves with resources that are currently available (see ‘Resources’ box; Figures 1 and 2).

Practice points

- Use a validated screening tool (e.g. ‘MUST’) to identify those at risk of malnutrition.
- Document and act upon nutritional risk score — always investigate underlying cause of unintentional weight loss.
- Discuss nutritional goals with the patient and implement appropriate care pathway. Remember, there are resources available to support you in providing appropriate nutritional advice. Refer to a dietitian for further advice if required.
- Commence prescription of oral nutritional supplements (ONS) if BMI is low (<20kg/m²); two bottles per day for 12 weeks. (NICE, 2010; Brotherton et al, 2012)
Malnutrition is prevalent among patients with COPD and may contribute to the morbidity and mortality associated with this disease. Malnutrition is currently under-recognised and undertreated, however general practice nurses play a pivotal role in the identification and management of this largely manageable condition. Nutritional support within COPD can be a challenging aspect of care, however evidence demonstrates that good nutritional status is associated with improved outcomes (Ferreira, 2012; Collins, 2013). This should therefore should form an integral part of the integrated care pathway for these patients.

REFERENCES


Collins PF, Stratton RJ, Elia M (2012)
Collins PF, Elia M, Stratton RJ (2013)

Malnutrition: general advice/practical pathway for managing malnutrition can be found in Managing Adult Malnutrition in the Community. Available online: www.malnutritionpathway.co.uk.

COPD: information from the malnutrition pathway has been reflected in Respiratory Healthcare Professionals — Nutritional Guideline for COPD Patients — an independent pathway developed by clinicians working in the field of COPD (Figure 2). Available online: www.arns.co.uk.

Both documents recommend prescribing ONS (two bottles [2 x 300kcal] per day for three months) for patients with a low BMI and/or unintentional weight/muscle loss. The COPD guideline also contains colour-coded diet sheets, written by specialist respiratory dietitians, that help to support clinicians when giving appropriate nutritional advice.
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