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EDITORIAL

Malnutrition research: high time to change the menu

Malnutrition is common in the elderly and may broadly be divided in protein energy malnutrition (PEM) and vitamin deficiency. In the literature, variable but generally high prevalence rates are found for protein energy malnutrition: 1–15% in community dwelling elderly, 25–65% in institutionalised elderly without acute diseases and in 35–65% of geriatric inpatients [1]. The definition of malnutrition varies significantly, which is one of the reasons for the heterogeneity in the epidemiological and clinical data [2]. Aetiologically, malnutrition should be regarded as a geriatric syndrome, because of the multiple factors, diseases and age-related risk factors, that disturb the balance between nutritional need and intake [3]. Malnutrition is often associated with mental disorders (depression and cognitive decline) as well as somatic disease. It is a major cause of functional decline and increased morbidity and mortality in the elderly. Therefore specific screening tools and more extensive assessment methods should be part of the geriatric assessment in order to diagnose and treat elderly patients at risk for malnutrition. Well known clinical problems such as dehydration and dysphagia are highly prevalent in patients suffering from malnutrition, and initial screening should address these problems as well [4, 5].

Recently, malnutrition related syndromes were defined such as sarcopenia, i.e. loss of muscle mass, and failure to thrive (FTT), i.e. involuntary loss of weight combined with functional decline. Both are also highly prevalent in geriatric patients and similarly caused by multiple risk factors, overlapping with malnutrition [6–8]. The New Mexico Healthy Aging Project provides evidence for a multifactorial etiology of sarcopenia in which reduced hormone levels (testosterone, IGF-1), disuse and loneliness are the risk factors [6]. In FTT endocrine and metabolic deterioration are part of the aetiology, [9, 10] while a number of diseases (e.g. cancer, infection, depression) are also highly prevalent [7]. Moreover, psychosocial circumstances and problems with coping should always be clarified by a physician or a social worker [8]. From these studies it becomes clear that malnutrition and FTT are very serious syndromes in older people, with high morbidity and mortality (10–60%) [1, 7].

In this issue, Gazzotti *et al.* [11] describe a geriatric inpatient population, half of whom were allocated to receive dietary supplementation. The control group lost >1 kg of weight, with a high spread around this average. This phenomenon of geriatric inpatients losing weight has been described by many authors, recently for example by Potter [12]. It is necessary, therefore, to assess whether we have made progress in this field, compared to the data available from a decade ago, which revealed an underdiagnosis of malnutrition of $>60\%$ [13]. FTT, loss of muscle mass or muscle power, and malnutrition are highly likely to result in frailty, which also has deleterious effects on mood, autonomy and quality of life [14]. These newly defined syndromes create their own research agenda, but the main question is whether the essential, simple nutritional questions have been put on the menu sufficiently.

In a recent systematic review, Akner *et al.* [15] showed that up to the year 2000, 26 nutritional intervention studies in geriatric patients have been published, of which almost all used oral liquid supplements, given without sophisticated targeting and without addressing the clinical reasons for malnutrition. Twenty of these studies (11 randomised controlled trials) noted an improvement in anthropometric or biochemical measures, and 10 (of which 6 were RCTs) also showed improvement in functional status. One study even reported a reduction in falls. Similar data are presented in the recent Cochrane review on protein and energy supplements [16]. This review's conclusion is that large-scale multi-centre trials are still required to provide final evidence as to whether simple nutritional interventions will really help patients, carers and also professionals.

In this issue, the study by Gazzotto *et al.* [11], though unblinded, confirms the impressive weight of evidence showing that weight loss in geriatric patients can be treated and probably prevented with nutritional supplements. Altogether, there is now reasonable evidence that PEM can be treated and probably prevented with high caloric liquids, and that this will have beneficial effects on body composition, muscle strength, and immune function. It works. Important related questions should now be urgently addressed. For example, does it also help with regard to walking, prevention of falling and other functional performance, and do elderly patients like these supplements? Most studies neglect this, though it is crucial for compliance. What happens and should be done after discharge? What are cost-effective nutritional interventions, and is the multiple aetiology of malnutrition

(FTT and sarcopenia) sufficiently addressed by the rather simple, single factor intervention of nutritional supplements? Gazzotti *et al.* [11] have added a new element to existing evidence, in that they have shown that nutritional supplements can remain effective if continued following discharge. Nutritional interventions probably have to be continued outside hospital to prevent weight loss and muscle wasting at home. Similarly, hard data on weight changes should accompany the patient on admission. Research on nutritional care at home could be a starter. As the main dish, we probably should search for efficient multifactorial interventions that can diminish dysphagia, fatigue, functional loss and muscle wasting, all closely intertwined with malnutrition. Fiatarone *et al.* [17] used high-intensity resistance training and nutritional supplementation in nursing home residents, but failed to show additional effects of the combination of the two measures. Nevertheless, because efficient geriatric care in general is interdisciplinary [18], nutritional supplementation should probably be embedded in an interdisciplinary protocol of screening and treatment for malnutrition. To tailor the intervention to the individual patient's needs, related issues also should be addressed (e.g. time, consistency, taste and type of meals, drink-rounds, positioning of the patient, swallowing technique, mood, behaviour, cognition and mobility). An interdisciplinary, and patient-based goal-assessment should be the starting point of such a programme [19]. Prevention of malnutrition should also be an aim in the coming years and could include implementation and assessment of educational programmes on nutrition for elderly people in the community. Data on the cost-effectiveness of different forms of nutritional interventions are still lacking in the literature. As many geriatric inpatients will need nutritional interventions, it is important to know the most efficient way to implement it in practice. Some reviews present data on expected costs, but most are highly speculative or based on computerised models [20].

Good quality of care in geriatrics should take into account what is known and what is needed in the field of nutritional supplementation. The ACOVE group supplied us with quality indicators in the field of malnutrition [21]. These indicators may be used in clinical audit to establish higher standards of care. It may be hard to accept, but substantial improvement in quality of care can still be gained by regularly measuring weight and documenting weight loss. Evidence about the efficacy of nutritional supplements is important, but only the aperitif. This evidence should be extended by outcome measures relevant to geriatric patients. As geriatric patients probably cannot escape from the multifactorial syndromes FTT, sarcopenia and malnutrition just with some cartons of magic potion, these successful studies should be an appetizer to address the next generation of questions. It's high time to change the menu.

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References

1. Omran ML, Morley JE. Assessment of protein energy malnutrition in older persons. Part I: history, examination, body composition, and screening tools. Nutrition 2000; 16: 131–40.

2. Chen CC, Schilling LS, Lyder CH. A concept analysis of malnutrition in the elderly. J Adv Nurs 2001; 36: 131–41.

3. Tinetti ME, Williams CS, Thomas MG. Dizziness among older adults: a possible geriatric syndrome. Ann Int Med 2000; 132: 337–44.

4. Olde Rikkert MGM, Deurenberg P, Jansen RWWM, Hoefnagels WHL, van 't Hof MA. Validation of multi-frequency bioelectrical impedance analysis in detecting changes in fluid balance of geriatric patients. J Am Geriatr Soc 1997; 45: 1345–51.

5. Steele CM, Greenwood C, Ens I, Robertson C, Seidman-Carlson R. Mealtime difficulties in a home for the aged: not just dysphagia. Dysphagia 1997; 12: 43–50.

6. Baumgartner RN, Koehler KM, Gallagher D *et al.* Epidemiology of sarcopenia among elderly in New Mexico. Am J Epidemiol 1998; 147: 755–63.

7. Hildebrand JK, Joos SK, Lee MA. Use of diagnosis "Failure to Thrive" in older veterans. J Am Geriatr Soc 1997; 47: 1113–7.

8. Berkman B, Foster LWS, Campion E. Failure to thrive: paradigm for the frail elderly. Gerontologist 1989; 29: 654–9.

9. Fox KM, Hawkes WG, Magaziner J, Zimmerman SI, Hebel R. Markers of failure to thrive among older hip fracture patients. J Am Geriatr Soc 1996; 44: 371–6.

10. Gelato MC, Frost RA. IGFBP-3. Endocrine 1997; 7: 81–5.

11. Gazzotti C, Arnaud-Battandier F, Parello M *et al.* Prevention of weight loss in older people during and after hospitalisation: results from a randomised controlled trial. Age Ageing 2003; 32: 321–5.

12. Potter JM, Roberts MA, McColl JH, Reilly JJ. Protein energy supplements in unwell elderly patients - a randomized controlled trial. J Parenter Enter Nutr 2001; 25: 323–9.

13. Mowe M, Bohmer T. The prevalence of underdiagnosed protein-calorie undernutrition in a population of hospitalised elderly patients. J Am Geriatr Soc 1991; 39: 1089–92.

14. Fried LP, Tangen CM, Walston J *et al.* Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci 2001; 56: M146–56.

15. Akner G, Cederholm T. Treatment of protein-energy malnutrition in chronic nonmalignant disorders. Am J Clin Nutr 2001; 74: 6–24.

16. Milne AC, Potter J, Avenell R. A Protein and energy supplementation in elderly people at risk from malnutrition. Cochrane Database Syst Rev 2002. CD003288.

17. Fiatarone MA, O'Neill EF, Ryan ND *et al*. Exercise training and nutritional supplementation for physical frailty in very elderly people. N Engl J Med 1994; 330: 1769–75.

18. Cohen HJ, Feussner JR, Weinberger M *et al*. A controlled trial of inpatient and outpatient geriatric evaluation and management. N Engl J Med 2002; 46: 905–12.

19. Yee Kiat T, Wynne HA. Malnutrition of the elderly patient in hospital: risk factors, detection and management. Rev Clin Ger 2001; 11: 229–36.

20. Reilly JJ, Hull SF, Albert N, Waller A, Bringardener S. Economic impact of malnutrition: a model system for hospitalized patients. J Parenter Enter Nutr 1988; 12: 371–6.

21. Acove-group. Acove quality indicators. Ann Intern Med 2001; 135: 653–67.