Anemia and transfusion in the elderly

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The prevalence of anemia in the elderly varies from about 3% in healthy community dwelling elderly to as much as much as 50%-60% in institutionalized elderly or patients in acute geriatric wards. Even though longitudinal studies indicate a progressive decline of hemoglobin levels and the fact that stem cell senescence and increases in inflammatory cytokines with aging probably contribute to the development of anemia, a low hemoglobin level should not be ascribed to senescence without thorough evaluation and workup. World Health Organization criteria for anemia (<13 g/dl in men and <12 g/dl in women) initially have been based on studies in men and women below the age of 65, but may be confirmed on the basis of recent large cohorts including significant numbers of patients above the age of 70 and 80 years. The rationale for a lower threshold level in elderly women that no longer present regular blood losses due to menses should nevertheless be questioned. Anemia in the elderly most commonly is due to nutrient deficiencies, chronic disease and inflammation and myelodysplastic syndromes. Iron deficiency anemia remains the most frequent deficiency in later life, folate deficiency is still frequent and vitamin B12 deficiency increases in the elderly compared to younger adults. Anemia of chronic disease is mainly due to inflammation and includes chronic kidney disease in which the inflammatory mechanism probably explains anemia in mild stages, whereas a decrease in erythropoietin levels explains anemia in severe renal failure with glomerular filtration rates below 30 ml/min. Myelodysplastic syndromes are often difficult to diagnose in early stages and cannot be cured in most elderly. Nevertheless, a subgroup with isolated deletion of the short arm of chromosome 5 has recently shown to respond particularly well to oral thalidomide analogues. Diagnostic workup is based mainly on mean corpuscular volume. In the absence of thalassemia microcytic anemia is almost always due to iron deficiency anemia and gastro-intestinal examinations should always be completed unless the general status of the patient represents a contra-indication. Normocytic anemia in the absence of renal disease is mainly due to acute or chronic inflammation and should ideally be treated by treating the underlying cause. Mixed deficiencies always have to be excluded. Macrocytic anemia is mainly caused by folate and cobalamin deficiencies that require diagnosis and cure; other cases, if not due to hypothyroidism or alcohol consumption, suggest myelodysplastic syndrome. The benefit of bone marrow examination and possible treatment options should be considered individually in these cases.

Even mild anemia is a marker of poor prognosis with increased morbidity, length of hospital stay, functional decline and mortality. All treatable underlying causes thus have to be detected. Symptomatic treatment with erythropoietin is indicated in severe renal failure and may be useful in anemia of chronic disease or myelodysplastic syndromes not
eligible for specific treatment. It is generally admitted that transfusions should not be based on fixed hemoglobin threshold levels but are indicated in patients that remain symptomatic after euvolementa and optimal tissue oxygenation have been achieved. This attitude is based mainly on mortality outcomes of the TRICC trial published ten years ago. It has to be stressed though that the mean age in this trial was below 60 years and that there is no evidence based strategy for elderly patients. One study suggests that elderly patients with acute myocardial infarction and a hematocrit below 30% will benefit from systematic transfusion. A small pilot study in hip fracture patients – that usually present with a geriatric profile – indicates better outcomes for systematic transfusion aiming to maintain hemoglobin levels above 10 g/dl. A large ongoing trial still has to confirm this. Even though some studies indicate that tolerance to hemodilution and hemodynamic tolerance to acute anemia is maintained in elderly people up to the age of 75 to 80 years, general guidelines advocate more liberal transfusion thresholds in the elderly and admit transfusions in elderly patients in general wards in the presence of hemoglobin levels below 8 or even 9 g/dl. Transfusions should be administered one by one and patients be re-evaluated between each unit. Slower transfusions rates and concomitant diuretics are usually proposed for the elderly.