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Editorial Comment

Anemia, a Whistle-Blower for the Mortality in the Elderly?

Anemia is a common condition in the elderly population, affecting approximately 17% of those over the age of 65.[1] Anemia is characterized by a deficiency in red blood cells or hemoglobin (Hb), which can result in a reduced capacity to carry oxygen to tissues throughout the body. Anemia can be caused by a variety of factors, including nutritional deficiencies, chronic kidney disease, cancers, chronic disease, and medications.

Although WHO has defined anemia to be Hb level < 13 g/dL in men and < 12 g/dL in non-pregnant women, Hb levels decline with age and it is still an issue of debate regarding whether these values are appropriate for the elderly. Nevertheless, most physicians accept that normal Hb levels should not be lowered for the elderly because of the evidence showing the reverse association between Hb levels and mortality[2,3] as well as hospitalization.[3] Culleton et al. showed that the optimal Hb level to avoid mortality and hospitalization was 13–15 g/dL for women and 14–17 g/dL in the elderly.[3] Recently, a report from 8935 community-dwelling elderly subjects in Thailand showed that the prevalence of anemia was up to 38.2%. For subjects with low mean corpuscular volume (MCV), men and women had Hb levels < 10 g/dL and < 9 g/dL, respectively, had a significantly increased risk of mortality (HRs 2.71 and 3.14, respectively; for those with normal MCV, both men and women with Hb level < 11 g/dL started to have a higher mortality (HR 1.98).[4] Taken together, these data suggest that the impact of Hb reduction on the mortality in the elderly seems to be ethnically or regionally distinct.

In the current issue of the *International Journal Gerontology*, Kawamoto et al.[5] exclusively provided data from Japan, another ethnic group in Asians. They followed up 1243 community-dwelling individuals for 7–19 years and found that Hb level < 13 g/dL in men and < 12 g/dL in women had a significantly higher mortality than the references (Hb levels: 14.0–14.9 g/dL for men and 13.0–13.9 g/dL for women). In agreement with previous report,[3] slight J-curve phenomenon was also observed in women, but not in men, with Hb > 15 g/dL slightly increasing the risk of mortality. Interestingly, this report also demonstrated that increase of Hb levels can be particularly helpful in reduction of mortality for those body mass index (BMI) < 22 kg/m^2.

The mechanisms underlying the association between anemia and mortality in the elderly are not yet fully understood. However, it is thought that anemia may contribute to the development of other health conditions, such as cardiovascular disease and frailty, which can increase the risk of mortality. Furthermore, anemia may exacerbate existing health conditions by reducing the oxygen-carrying capacity of the blood, leading to tissue hypoxia and damage. Anemia may also impact immune function and increase the risk of infections, which can lead to sepsis and death. It is important to note that not all cases of anemia in the elderly are associated with an increased risk of mortality. The severity and underlying cause of anemia can play a significant role in determining its impact on health outcomes.[6] Therefore, it is important for older adults with anemia to undergo a thorough evaluation to identify the underlying cause and appropriate treatment.

In conclusion, anemia is a common condition in the elderly population and growing evidence shows that it is associated with an increased risk of mortality. Further research is needed to better understand the mechanisms underlying this association and to develop effective strategies for preventing and treating anemia in older adults. Healthcare providers should be aware of the potential impact of anemia on health outcomes in older adults and consider appropriate evaluation and treatment for this condition.

References

1. Stauder R, Thein SL. Anemia in the elderly: Clinical implications and new therapeutic concepts. *Haematologica.* 2014;99:1127–1130.
2. Zakai NA, Katz R, Hirsch C, et al. A prospective study of anemia status, hemoglobin concentration, and mortality in an elderly cohort: the cardiovascular health study. *Arch Intern Med.* 2005;165:2214–2220.
3. Culleton BF, Manns BJ, Zhang J, Tonelli M, Klarenbach S, Hemmelgarn BR. Impact of anemia on hospitalization and mortality in older adults. *Blood.* 2006;107:3841–3846.
4. Karoopongse E, Srinonprasert V, Chalermsri C, Aekplakorn W. Prevalence of anemia and association with mortality in community-dwelling elderly in Thailand. *Sci Rep.* 2022;12:7084.
5. Kawamoto R, Kikuchi A, Tokumoto Y, Kumagi T. Association between hemoglobin levels and all-cause mortality rate in Japanese community-dwelling individuals. *Int J Gerontol*. 2023;17:92–98.
6. Dharmarajan TS, Pais W, Norkus EP. Does anemia matter? Anemia, morbidity, and mortality in older adults: Need for greater recognition. *Geriatrics.* 2005;60:22–27, 29.

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