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Letter to Editor



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Author for correspondence:

Abdollah Mohammadian-Hafshejani

e-mail: amohamadii1361@gmail.com

Erythropoietin and treatment of cancer-associated malignant anemia

Khadijah Allah Bakeshei¹, Hamid Salehiniya², Fatemeh Allah Bakeshei³ and Abdollah Mohammadian-Hafshejani^{4,5}

¹Department of Social Medicine, School of Public Health, Dezful University of Medical Sciences, Dezful, Iran

²Zabol University of Medical Sciences, Zabol, Iran

³Student Research Committee, School of Public Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁴Department of Epidemiology and Biostatistics, School of Public Health, Shahrekord University of Medical Sciences, Shahrekord, Iran

⁵Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

1. Dear editor in chief

Cancer anemia, which is known as the malignant anemia associated with cancer, is one of the clinical symptoms of cancer and occurs in about half of cancer patients [1-3]. Malignant tumor anemia is a common complication in various malignant tumors. In this anemia, the destruction of red blood cells leads to a decrease in access of tissues to oxygen leading to a reduced sensitivity of tumors to treatments such as radiotherapy and chemotherapy, and thus reduced quality of life in patients, reduced survival time and impact on the cancer prognosis [4,5]. So, that the mortality rate in patients with anemia is two times higher than the patients without anemia during three years after diagnosis of cancer [6]. Despite the fact that some studies have found that erythropoietin may improve symptoms of cancer-related anemia, this issue is still controversial in scientific literature and sessions. Undoubtedly, meta-analysis studies, which analyze randomized clinical trials, provide the highest levels of scientific inference. According to the meta-analysis by Feng Zhao *et al.*, who compared the erythropoietin receiving groups and placebo receiving groups, erythropoietin significantly increases blood hemoglobin levels compared with placebo, so that the Mean Difference(MD) of hemoglobin levels was equal to MD=0.66 (at the confidence interval (CI) of 95%, 0.14-1.18; P= 0.01) in the short-term follow-up and equal to MD=0.10 (CI of 95%, 0.02-0.18; P=0.01) in the long-term follow-up. Furthermore, there was a significant difference in effect of erythropoietin on hematocrit compared to placebo, so that the mean difference of hematocrit level was equal to MD= 2.47 (CI of 95%, 0.75-4.19; P= 0.005) in the short-term follow-up and MD=7.60; (CI of 95%, 6.15-9.05; P<0.00001) for the long-term follow-up. The mean difference in blood transfusion in the erythropoietin group compared to the placebo group was equal to MD= -0.45; (CI of 95%, -0.92-0.03; P=0.07) [7]. Therefore, erythropoietin increases the hemoglobin and hematocrit levels and also reduces the patients' need for blood transfusion compared with placebo. These results indicate that erythropoietin is beneficial for treatment of cancer-related anemia and leads to improved survival of cancer patients, and thus it is recommended that the physicians should use erythropoietin for treatment of anemia in this group of patients in order to improve the disease prognosis and quality of life and increase their survival rates.

2. List of abbreviations

CI: Confidence Interval ; **MD:** Mean Difference

3. Open Access

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4. Competing interests

The authors declare that no competing interests exist.

5. Authors' contributions

All authors contributed to the design of the research, AMH and HS, extracted the data and summarized it. All authors drafted the first version. KAB and FAB edited the first draft. All authors reviewed, commented and approved the final draft.

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