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Hematological malignancy Associated with Anemia

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Abstract

Multiple myeloma (MM) accounts for 1% of all malignancies and more than 10% of hematologic neoplasms. The disease is more common in elderly people, and blacks are affected twice as frequently as whites. The cause of MM is unknown, although significant progress has been made to have a better understanding of the pathogenesis. The disease is very heterogeneous in terms of its extend complications sensitivity to drugs and clinical course, and manifestations vary widely among patients. Anemia is a common clinical manifestation in patients with MM.

Introduction

Anemia occurring in patients with MM is multifactorial Several factors have been implicated in the pathogenesis. Malignant plasma cells can supplant normal plasma cells in the bone marrow This infiltration can lead to BM failure and anemia.

Multiple Myeloma is a clonal disorder of plasma cells that accounts for approximately one percent of all cancers and ten percent of hematologic malignancies. It is a disease of the elderly with a median age at diagnosis of 66 years and less than 10% of cases occurring in patients younger than 50 years. Although new therapeutics have improved the prognosis, myeloma remains incurable with a median survival of 7–8 yrs It is 2–3 times more common in African Americans than in whites and is slightly more common in men than women. (1)

Anemia is a frequent finding in myeloma patients. One large retrospective analysis of more than one thousand patients found that 73% of myeloma patients were anemic at the time of diagnosis with hemoglobin levels <12g/dl Other studies 6,7 have demonstrated that more than 95% of myeloma patients will suffer from anemia at some point during their disease. Anemia is typically moderate with hemoglobin concentrations between 8 and 10 g/dl in most patients up to 10% of myeloma patients have hemoglobin concentrations less than 8g/dL and, in general, anemia impacts quality of life8 and is an independent predictor of decreased survival The anemia

typically worsens with disease progression and often improves during chemotherapy-induced response. (2)

Erythropoietic stimulating agents (ESAs) have been commonly used for the treatment of anemia of multiple myeloma (as well as other malignancy-associated anemias) Several studies have addressed the pathogenesis and hematologic characteristics of myeloma-associated anemia. The anemia is usually normochromic and normocytic with evidence of hypoproliferation (reticulocyte index < 2.5%).20 Iron studies demonstrate low to normal serum iron levels and elevated serum ferritin levels.21 Bone marrow biopsy may show an increase in hemosiderin-laden macrophages with normal to increased iron stores, consistent with impaired iron mobilization and release.21 As expected, patients with myeloma-associated renal disease have abnormally low levels of serum erythropoietin but even some without obvious renal impairment may have insufficient increases in erythropoietin levels for the severity of anemia (4)

the aim of this study was to verify incidence and characteristics of Multiple Myeloma with Anemia .

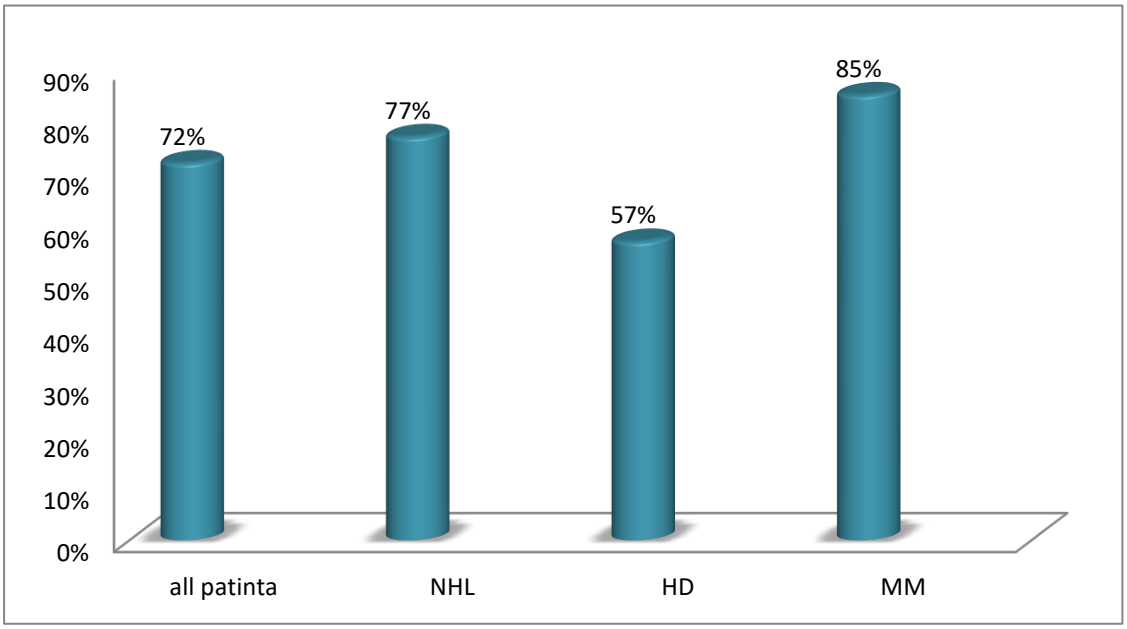
Material and method

A literature search was performed to discover studies reviewing the correlation between multiple myeloma and anemia, online sites and databases included in this report are PubMed database and google scholar and some text book search terms included “ Multiple myeloma ” and “ Anemia ” and " hematologic neoplasms " Titles

significance studies showed that the 2316 patients were evaluable found that 1612 have L 77% have a anemia and 704 have MM 85% suffer from anemia While 15 317 patients enrolled in ECAS 2360 individuals were patients with L/MM, 2316 of whom were evaluable 52.5% of the L/MM patients were anemic the majority of whom 69.2% had MM any time during European cancer anemia survey (ECAS) received anemia treatment .

Result

As a result of several studies that have proven the relationship between Multiple myeloma and Anemia one of the studies showed that the 2316 patients were evaluable (1612 L and 704 MM). Anemia rate at enrollment was 52.5%. At enrollment, Hb levels correlated significantly with WHO scores Anemia prevalence during ECAS was 72.9% (MM, 85.3%; non-Hodgkin's lymphoma, 77.9% Hodgkin's disease, 57.4%) incidence in chemotherapy patients was 55.4%. Only 47.3% of patients anemic any time during ECAS received anemia treatment overall Hb nadir for initiating treatment was 8.9 g/dL (epoetin, 9.5 g/dL transfusion, 8.2 g/dL). Factors found to significantly increase anemia risk were low initial Hb, female gender, persistent/resistant disease, and platinum chemotherapy.



Discussion:

ECAS (European cancer anemia survey) is the first published prospective survey with data on anemia in European cancer patients with L/MM. The survey was conducted to establish a comprehensive and clinically useful database to help clarify the complex factors surrounding the development of cancer-associated anemia Of the

15 317 patients enrolled in ECAS 2360 individuals were patients with L/MM, 2316 of whom were evaluable.

Analyses of the data for the L/MM subgroup demonstrated the magnitude of both the prevalence and the incidence of anemia in this population At enrollment slightly more than half 52.5% of the L/MM patients were anemic the majority of whom 69.2% had MM.

During ECAS the frequency of anemia in the L/MM population rose to 72.9%. As would be expected, the highest frequency was observed among patients with MM 85.3%, followed by those with NHL 77.9% and HD 57.4% reflecting the different pathophysiology of anemia in these three malignancies.

The incidence of anemia in L/MM patients, which was determined in a specifically defined 'incidence' group (chemotherapy patients neither anemic nor receiving anemia treatment at enrollment, first chemotherapy during ECAS, and at least two chemotherapy cycles during the survey) was found to be 55.4%. The frequency of anemia during ECAS as well as its incidence, was greater in patients ≥60 yr of age than in patients <60yr of age (frequency: 81.1% vs. 65.2% incidence 65.9% vs. 48.9%).
This may also partially explain why anemia was less frequent in patients with HD – these patients being younger than those in the other groups. Additionally, it was found that treatment of cancer-associated anemia in L/MM patients is often suboptimal, with more than 50% of anemic patients receiving no treatment.

Taken together, the demonstrated high rate of anemia in L/MM patients, particularly in elderly individuals, and suboptimal treatment of anemia in this population are concerns for several reasons.

First, as with cancer patients in general, anemia in L/MM patients can lead to fatigue, dyspnea cardiovascular complications cognitive dysfunction, and other symptoms that adversely affect the patients physical status, functional capacity and subsequently the primary symptom of anemia, has been associated with significant physical, emotional

social, and economic consequences that impact not only the patients but often their families and/or primary caretakers as well

Fatigue is especially problematic in the L/MM population, as many of these patients are older individuals who typically have a number of comorbidities that are already straining their physical and mental reserves and their functional capacity second anemia may contribute to poorer patient and therapeutic outcomes, including reduced survival Associations have been found between low Hb levels and decreased survival in patients with NHL, HD, mantle cell lymphoma, chronic lymphocytic leukemia, and as well as solid tumors

Although anemia rates were high for patients with L or MM in the survey, not all patients developed anemia. Therefore, data from patients who were neither anemic at enrollment nor receiving anemia treatment, received their first chemotherapy during ECAS, and underwent at least one validation population or two chemotherapy.

Conclusion

that anemia is a widespread and serious problem among L/MM patients, Supporting this are the findings that both the prevalence and the incidence of anemia in L/MM patients are high, that anemia is relatively severe (Hb nadir <10.0 g/dL) in more than half of patients affected, and that anemia in L/MM patients is often untreated also the greater likelihood of patients with MM or NHL to develop anemia, compared with HD patients. Further more, patients with any of these malignancies who are identified as being at high risk for anemia should be followed carefully to assure timely intervention and optimal anemia management.

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