PITASOR epidemiological study: prevalence, incidence and treatment of anaemia in radiation therapy oncology departments in Spain

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Abstract

Introduction Anemia is the most common haematological complication in cancer patients.

Objective Analysis of the incidence, prevalence and treatment of anemia in oncologic patients treated in Radiation Oncology Departments in Spain (ROD) and monitoring of the existing recommendations for the treatment of anemia.

Material and methods Observational, prospective, multicenter study which involved 19 Spanish ROD. The study was approved by the CEIC Central Defense Hospital. 477 patients with solid tumors, subsidiary of RT with radical intent referred to such centers within a period of one month (5/5/09 to 5/6/09) and gave their consent to participate in the study. We gathered the main characteristics of patients and their oncologic disease. All patients underwent a determination of Hb levels before RT, upon reaching 25-35 Gy and at the end treatment. In patients with anemia we assessed the existence of related symptoms and its treatment.

Results Basal situation: The prevalence of anemia was 34.8% (166 patients). Mean Hb in patients with anemia was 11.17±1.07 g/dl. Anemia-related symptoms were present in 34% of the patients. Anemia predisposing factors were: stage of the disease, previously received chemotherapy, and hormonal therapy. 39% (66 patients) received anemia treatment, with a mean Hb of 10.43±1.04 g/dl. During RT: The prevalence of anemia was 38.9% (182 patients) with a mean Hb of 11.24±1.21 g/dl. During RT the incidence of anemia is 17.5%. Predisposing factors for anemia during RT treatment were: age, male sex, chemotherapy prior to RT, basal anemia and chemotherapy during RT. 36.3% (66 patients) had anemia-related symptoms. 34.6% (63 patients) with a mean Hb of 10.5±1.37 g/dl received treatment for anemia. The prevalence of anemia at the end of the RT was 38.1% (177 patients) with a mean Hb of 11.19±1.18 g/dl. The predisposing factors for the appearance of anemia at the end of RT were: male sex, anemia at basal situation and during treatment and chemotherapy during RT. 34% (63 patients) had anemia-related symptoms and 73 patients (41.2%) with a mean Hb of 10.5±1.22 g/dl received treatment for anemia. The presence of anemia-related symptoms was significantly correlated with the beginning of treatment for anemia. The incidence of anemia (new cases) during radiotherapy was 17.5%.

Conclusion The prevalence of anemia in basal situation, during RT and at the end of RT is 34.8%, 38.9% and 38.1%. During RT the incidence of anemia is 17.5%. 39.8%-41.2% of patients with anemia and 64.2%-68% of patients with anemia-related symptoms received treatment. Treatment of anemia starts with Hb<11 g/dl and the goal is to achieve Hb 12 g/dl. In our Radiotherapy Oncology Departments, the treatment of anemia complies with the current recommendations and guidelines in use.

Keywords Anaemia · Radiotherapy · Epidemiology

Introduction

Anaemia is the most common haematologic complication in cancer patients. In accordance with the WHO definition, we consider any patient with haemoglobin (Hb) levels of below 13 g/dl in men and below 12 g/dl in women to be anaemic [1].
Based on this definition, and in accordance with the publications on anaemia in cancer patients undergoing radiation therapy in Spain, at baseline, 28% of patients have anaemia and 27% develop the condition at some point during radiation therapy [2].

The ECAS (European Cancer Anemia Survey) study reveals an anaemia prevalence of 39.3% at the time of inclusion in the over fifteen thousand patients involved, with the striking fact that 67% of the patients included developed anaemia during the study. Of the patients studied, 10% had Hb levels below 10 g/dl before their inclusion in the study, and 38.9% of patients reached these levels during the study [3].

The advent of erythropoiesis-stimulating agents (ESAs) revolutionised the treatment of anaemia in cancer patients as they made it possible to avoid the risks of transfusion, correcting the anaemia in the long term and improving quality of life for patients [4].

In an attempt to unify the treatment criteria, different scientific societies developed guidelines for the treatment of anaemia, based on its intensity and implications [5–7]. However, the emergence of various studies, such as those of Henke et al. [8] and Leyland-Jones [9], led, in 2007, to an FDA warning of the risks of ESA use and a change in the guidelines on anaemia treatment [10].

The aim of this study is to analyse the current status of the incidence, prevalence and treatment of anaemia in cancer patients treated in Radiotherapy Oncology Departments in Spain and the monitoring of current recommendations for treating anaemia.

Material and methods

This is an observational, prospective, multicentre study in which 19 Spanish Radiation Therapy Oncology Departments (RTOD) took part. The study was approved by the IEC of the Hospital Central de la Defensa “Gómez Ulla”. It included 477 patients diagnosed with solid tumours, eligible for radiation therapy (RT) with curative intent, referred to these centres over a recruitment period of one month (from 5/5/09 to 5/6/09) and who gave their consent to participate in the study.

General characteristics were collected on the patients and the oncological disease (age, sex, performance status, tumour type, date of diagnosis of oncological disease, tumour site, stage), prior treatment (surgery, chemotherapy (CT), hormone therapy) and planned treatment (RT, RT+CT concomitant RT+hormone therapy, sequential CT+RT).

Hb levels were measured in all patients before starting RT, at 25–35 Gy and at the end of RT. In patients who had anaemia (defined according to WHO criteria), the existence of related symptoms was determined along with whether any anti-anaemia treatment was prescribed (transfusions, iron or ESAs, determining the type of agent, dose and dosing regimen).

SPSS version 15.0 was used for the statistical analysis. A descriptive analysis of the sample was conducted. The prevalence and incidence of anaemia was analysed in the three sections: baseline, midway and at the end of RT, together with the predisposing factors for anaemia, the symptoms associated with anaemia and anti-anaemia treatment. For comparisons of qualitative variables, the Chi-square test was used, with ANOVA for quantitative variables. A significance level of 95% (p<0.05) was considered.

Results

Baseline

The baseline characteristics of the patients are described in Table 1. The prevalence of anaemia on arrival at the RTOD was 34.8% (166 patients) and the mean Hb of patients with anaemia was 11.17±1.07 g/dl (95% CI, 11.00–11.33). The predisposing factors for anaemia were stage and prior chemotherapy. Hormone therapy appeared to exert a protective effect. When independently analysing the effect of hormone therapy exclusively in patients with breast cancer and prostate cancer, it was observed that, of the 143 patients with breast cancer, 31 received HT, of which 5 (16.1%) had anaemia, and of the 112 who were receiving CT rather than HT, 35 (31.3%) had anaemia (p=0.072). Of the 73 patients with prostate cancer, 37 were receiving HT and, of these, 7 (18.9%) had anaemia, and of the 36 who were not receiving HT, none had anaemia (p=0.006).

Of the 166 patients who had anaemia, 57 (34.3%) had anaemia-related signs or symptoms: asthenia (48 patients, 82.7%), mucocutaneous pallor (40 patients, 70.1%), dyspnoea (8 patients, 14%), palpitations (8 patients, 14%), vertigo or dizziness (5 patients, 8.7%), headache (5 patients, 8.7%), worsening of ischaemic vascular symptoms (1 patient); 66 patients (39.8%) were receiving anti-anaemia treatment. The type of treatment is described in Table 2. The mean Hb of the 66 patients with anaemia receiving anti-anaemia treatment was 10.43±1.04 g/dl (95% CI, 10.1–10.6) and that of the 100 patients with anaemia not receiving treatment for the condition was 11.65±0.77 g/dl (95% CI, 11.5–11.8), p=0.000. The mean Hb of the 6 patients who received transfusions was 9.3±1.1 g/dl (range from 7.7 to 10.4 g/dl). A total of 68% of patients with anaemia-related symptoms were treated for anaemia compared to 63% without symptoms (p=0.000).

During radiation therapy

With a mean delivered dose of 30.5 Gy, laboratory data are available on 468 patients (98%). The mean Hb was 12.7±1.67 g/dl. The prevalence of anaemia during RT was 38.9% (182 patients) with a mean Hb of 11.24±1.21 g/dl (95% CI, 11.06–11.42); 286 patients (61.1%) had no anaemia, with a mean Hb of 13.7±1.10 g/dl (95% CI, 13.61–13.87), p=0.000. The predisposing factors for anaemia during radiation therapy were age (63.5±11.2 vs. 60.4±13.1 years, p=0.009), gender (46.2% of men had anaemia vs. 30.8% of women, p=0.000), chemotherapy