The use of erythropoietin in gynecologic cancer patients

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Summary

Purpose: To investigate the possible benefits of erythroproietin ingestion in patients with various gynecological cancers with proven severe iron deficiency anemia.

Method: Seven patients with gynecological cancer were included in the study. Nadir hematocrit values were found to be 20-24% before the initiation of recombinant human erythropoietin treatment. Initial therapy started at 50 μ/kg/dose, three times weekly for a month. The dose was modified according to the rise of hemoglobin after a month's period. The dose was modified according to the rise of hemoglobin after a month's period. If the rise was greater than 2 g/dl the dose was changed to 25 μ/kg two times weekly and if it was less than 2 g/dl it was changed to 25 μ/kg three times weekly per month. Five patients were simultaneously given erythropoietin therapy and iron supplementation.

Results: We confirmed a rise in the hematocrit values which averaged 0.5-1.5% weekly till the upper limit. Reticulocyte and hematocrit values were higher in the erythropoietin plus iron group (five cases).

Conclusion: In this small series, erythropoietin appeared to be effective in treating severe iron deficiency in gynecologic cancer patients. Further investigation is needed to confirm these results.

Key words: Gynecologic cancers; Severe anemia; Erythropoietin.

Introduction

Erythropoietin is a glycoprotein hormone produced primarily by cells of the peritubular capillary endothelium of the kidney and is responsible for the regulation of red blood cell production. Recombinant human erythropoietin has been approved for treatment of anemia from renal failure [1] since 1989, and has been widely used in the treatment of neutropenia or anemia associated with HIV infection or secondary to zidovudine therapy [2]. The use of recombinant human erythropoietin in 1999 has increased (approximately 40%) compared with 1998 in certain hospitals.

Patients with uterine or ovarian tumors frequently develop anemia. Causes of anemia in these patients are still not fully understood. In patients with malignant tumors, plasma erythropoietin is inappropriately low with respect to the hemoglobin concentration [3].

The purpose of our study was to investigate the probable benefits of eruthroproietin use in gynecologic cancer patients with proven severe iron deficiency anemia (ferritin < 15 g/l) non-responsive to oral or parenteral iron therapy only.

Materials and methods

Seven patients with gynecologic cancer were included in the study. Three patients had endometrial cancer, two patients ovarian cancer and two patients cervical cancer. Serum iron, transferrin, ferritin, and erythropoietin levels were measured in all patients. Nadir hematocrit values before initiation of erythropoietin were 20-24%; 50-160 U/kg/week of erythropoietin was administered subcutaneously, postoperatively. Initial therapy started at 50 units/kg, three times weekly. If the rise in hemoglobin was less than 2 g/100 ml per months, then dose increments of 25 units/kg three times weekly at four week intervals were given. If the rise in hemoglobin was greater than 2 g/100 ml per month on 50 units/kg/dose, three times weekly, then the frequency of administration decreased to two times weekly. Maximum dose did not exceed 200 units/kg, three times weekly. Iron supplementation was given simultaneously in five cases.

Results

Initially the rise in hematocrit averaged 0.5-1.5% each week, with peak values of 25.5-33%. Although the optimal target hematocrit during treatment with erythropoietin is still controversial we decided to stop the administration of the regimen at the upper limit that was set.

Reticulocyte and hematocrit values were higher in the erythropoietin + iron (five cases) group than in the erythropoietin group (two cases).

Hypertension (160/100 mm Hg) and headache was observed in one patient (it is known that erythropoietin therapy can lead to marked increases in blood pressure).

Erythropoietin-induced hypertension was hematocrit independent in our patient.

Discussion

Cancer is frequently associated with anemia and may be related to inadequate erythropoietin production. It

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seems that uterine or ovarian malignancy exerts a suppressive effect on erythropoietin secretion [3]. Although we did not measure erythropoietin secretion in the women included in the study, it is possible that cervical cancer had the same suppressive effect in our patients.

Conclusion

In this small series erythropoietin appeared to be effective in treating gynecologic cancer patients with severe iron deficiency anemia. Additional experience and a control group is needed to further evaluate this medication in patients with gynecologic malignancies.

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