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Darbepoetin Alfa

A Viewpoint by Robert Pirker

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Anaemia associated with cancer is a clinically relevant problem affecting about 50% of patients with cancer, impacting particularly on the quality of their lives. Drug treatment of anaemia in patients with cancer has become possible through the development of both epoetin and, more recently, darbepoetin alfa.

Darbepoetin alfa, a novel erythropoiesis stimulating protein, binds to the same receptor and stimulates erythropoiesis in the same manner as endogenous erythropoietin and epoetin. Due to its chemical modification, darbepoetin alfa has an approximately three times longer serum half-life than epoetin-α and epoetin-β, which results in increased activity and allows for dosing at less frequent intervals. The extended dosing intervals without loss of efficacy are a major clinical advantage of darbepoetin alfa, resulting in improved convenience for patients, better patient compliance due to the reduction in required clinic or hospital visits and, as a result, potential cost savings. Extended dosing intervals may also permit administration of darbepoetin alfa once per chemotherapy cycle.

Darbepoetin alfa is effective in raising haemoglobin levels, reducing red blood cell transfusion requirements and increasing health-related quality of life. In a phase III randomised, double-blind, placebo-controlled trial in patients undergoing platinum-based chemotherapy for lung cancer, darbepoetin alfa significantly decreased the percentage of patients requiring RBC transfusions, increased the percentage of patients with a haematopoietic response and improved health-related quality of life. Darbepoetin alfa was also associated with a prolonged progression-free survival of patients with small-cell lung cancer and a shorter duration of hospitalisation. Results from recent trials indicate that patients with cancer-related anaemia (not receiving chemotherapy) may also benefit from treatment with darbepoetin alfa.

In clinical trials in patients with cancer and chemotherapy-related anaemia darbepoetin alfa was well tolerated. Development of anti-darbepoetin alfa antibodies in these trials was not observed.

Further studies with darbepoetin alfa should address the dose-response relationship, the optimal timing for administration with respect to the timing of chemotherapy, the characterisation of patients who will respond to the drug, the role of iron in optimising the response, and the effect of the drug on cognitive function. The potential impact of darbepoetin alfa on treatment outcomes including survival should also be studied in properly designed clinical trials.

In conclusion, darbepoetin alfa will become an important drug, firstly, for the prevention and treatment of chemotherapy-related anaemia and, secondly, for anaemia unrelated to chemotherapy. Darbepoetin alfa will have a major impact on the quality of life of patients with cancer and its potential impact on treatment outcomes will have to be addressed in properly designed clinical trials. ▲