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Oncology Pharmacy Newsletter

The Oncology Pharmacy Newsletter is publication dedicated to providing useful information for the staff treating patients who come to the Oncology Outpatient Pavilion.

Questions and requests for topics are welcome.

References available upon request.

My patient has a low magnesium and an end of day appointment. Can I infuse electrolytes in the same line as cyclophosphamide?

Cyclophosphamide is mixed in 250ml NS and is generally less than a 2.5g total dose when infused at our Cancer Center. At this concentration there is known compatibility with commonly infused electrolytes such as magnesium sulfate, potassium chloride and calcium gluconate, the most commonly replaced electrolytes in our patients.

Although we give phosphate supplementation less frequently, both sodium and potassium phosphates are compatible with cyclophosphamide. However, remember that phosphates and calcium supplementation should never be infused in the same line.

Solaris® (Eculizumab)

Eculizumab is FDA approved for the treatment of atypical hemolytic uremic syndrome (aHUS) and paroxysmal nocturnal hemoglobinuria (PNH). It is not indicated for treatment of Shiga toxin E. coli related hemolytic uremic syndrome[1,2]. Eculizumab is a monoclonal antibody that blocks complement activation by binding to the complement protein C5, preventing its cleavage into its active form. Patients with PNH have genetically abnormal red blood cells that are sensitive to complement mediated destruction leading to anemia, pain, shortness of breath, hematuria, and formation of thrombi. Patients with aHUS have impairments in compliment activation regulation leading to uncontrolled complement activation manifesting in platelet activation, endothelial cell damage, and thrombotic microandiopathies[1,7].

Eculizumab carries a boxed warning for associated meningococcal infection, so the patient must receive the meningococcal vaccine 2 weeks prior to starting therapy with eculizumab. Patients should be educated about the symptoms of meningitis and advised to immediately report any of the following: Headache with nausea or vomiting, headache with fever, headache with stiff neck or back, fever alone, fever and rash, confusion, muscle aches with flu-like symptoms, light sensitivity[3]. This susceptibility to meningococcal infections can continue for several weeks following the discontinuation of eculizumab[3].

Only prescribers who have completed the Soliris® certification process may prescribe eculizumab. There is a REMS monitoring program mandated with the use of this drug. Patients must receive education about the side effects of eculizumab prior to starting therapy.

Adult dosage regimens are as follows:
PHN – 600mg weekly for 4 weeks, followed by 900mg one week later, then 900mg every 2 weeks.
aHUS – 900mg weekly for 4 weeks, followed by 1200mg one week later, then 1200mg every 2 weeks.
Doses in renal or hepatic failure have not been studied.

Plasmapheresis or plasma exchanges, or fresh frozen plasma (FFP) infusions require supplemental doses of eculizumab to be given. Patients receiving FFP should receive 300mg eculizumab one hour prior to the FFP infusion. Patients undergoing plasmapheresis or exchange should receive 600mg within 1 hour of completing the procedure[1].

Patients should have CBC with differential, LDH, SCr, AST, and urinalysis done prior to therapy. Patients should be monitored for signs of meningitis throughout treatment and for three months after therapy. Infusion reactions may occur. Patients should be monitored during the infusion and for 1 hour after completion of the infusion.[2]

Adverse effects include headache, nasopharyngitis, nausea, vomiting, diarrhea, constipation, abdominal pain, muscle or joint pain, back pain, spasms, cough, insomnia, upper respiratory infection, urinary tract infection, hypertension, peripheral edema. Patients should be educated about and monitor themselves for signs of infusion reaction, infection, stroke, hypokalemia, DVT, anemia, bleeding, seizures, urinary retention, cardiac issues, swelling of extremities of loss of energy and immediately report any of the above to their prescriber.[2,3,4,5] After discontinuing eculizumab, patients should be monitored for signs of thrombotic microangiopathy (TMA) including mental status changes, seizures, chest pain, shortness of breath, or other thrombosis for at least 3 months. Decreases in platelet counts, or increased serum creatinine or serum LDH can be indicators of TMA and these should be monitored during and following discontinuation of eculizumab.[6]

Pre-established anticoagulation therapy should be continued during eculizumab treatment.[5]

Drug interactions include possible potentiation of immunosuppressive agents, so use in combination with such agents should be avoided or closely monitored. This may extend to agents such as natalizumab, belimumab, trastuzumab, and denosumab. Live vaccines and BCG should be avoided during and for up to 3 months after cessation of treatment with eculizumab. Inadequate response may result from administration of inactivated vaccines or immunotherapies such as sipuleucel-T or nivolumab administered during or within 3 months of cessation of therapy. If a patient receives a vaccine during treatment, revaccination may be necessary 3 months after the last dose. Influenza vaccine would be a vaccine likely to fall into this category. Echinacea should be avoided.[2] Please consult with Pharmacy if there are drug interaction concerns.

The eculizumab dose is prepared as a 5mg/ml solution in NS or D5W in an empty infusion bag. Soliris® is provided as a 10mg/ml solution and must be diluted with an equal amount of NS or D5W prior to administration. The admixture must be inverted to mix and not be shaken. It must not be administered if discolored or if it contains particulates. Diluted doses must be at room temperature before administration and may not be warmed with any means other than exposure to room temperature. Admixed doses are infused over 35 minutes. If an infusion reaction occurs, the rate may be decreased and/or temporarily discontinued. The entire dose must be infused within 2 hours, although the admixed dose is stable for 24 hours at room or refrigerated temperatures.[1,2]

1. http://www.soliris.net/resources/pdf/soliris_pi_mg.pdf
2. http://online.lexi.com/lco/action/doc/retrieve/docid/patch_f/810198
3. http://solirisrems.com/docs/HCP%20Safety%20Brochure%20-%2040042-D%20February%202016.pdf
4. http://solirisrems.com/docs/Patient%20Safety%20Card%2040042-A%20English%20February%202016.pdf
5. http://solirisrems.com/docs/Patient%20Enrollment%20Form%20-%2040042-C%20February%202016.pdf
6. http://www.soliris.net/
7. http://www.rxlist.com/soliris-drug/clinical-pharmacology.htm

Questions or comments?

Please contact: Susan Glassman glassman@uchc.edu
Chris Niemann niemann@ uchc.edu