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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.

Cinqair® reslizumab

Cinqair (reslizumab) is a recently approved monoclonal antibody for use in asthma with an eosinophilia phenotype as an additional maintenance treatment in patients. It is not for use in treatment of acute asthmatic symptoms or in other eosinophilic conditions. It will be used in the AACU in the near future.

Reslizumab is an interleukin-5 monoclonal antibody which inhibits interleukin-5 signaling reducing the recruitment, activation, production, differentiation, and survival of eosinophils. The specific mechanism of action in asthma has not been determined.

The dose of reslizumab is 3mg/kg once every 4 weeks. At present there are no dose modifications for renal or hepatic compromise.

Reslizumab is administered diluted in 50ml NS and infused over 20-50 minutes. It requires a 0.2micron inline filter. The line should be flushed with NS after administration, and no other agents should be given simultaneously through the same line as reslizumab.

The vials should be brought to room temperature before use, not be shaken, and the dose must be added slowly to the diluent bag to avoid foaming. The diluted solution may be inverted to mix, but never shaken. Diluted solutions are stable refrigerated or at room temperature, if protected from light, for 16 hours.

Anaphylaxis has been observed in 0.3% of patients receiving reslizumab. Vital signs should be taken before starting the infusion and 30 minutes into the infusion. If a patient has an anaphylactic response, reslizumab should be permanently discontinued. Anaphylaxis has been reported as soon as the second dose.

Adverse effects of reslizumab reported to date are few, and include oropharyngeal pain, increased CPKs (20%) and myalgia (1%). An increase of the incidence of malignancies has been reported (0.6% vs. 0.3%).

In addition, parasitic helminth infections (worms such as roundworms, flatworms, schistosomes and tapeworms) require an eosinophilic response. If a patient has or becomes infected with a helminth type of organism, reslizumab should be discontinued until treatment is complete.

Although it is possible that maintenance doses of corticosteroids may be reduced in patients receiving reslizumab over time, there are no studies as of yet addressing the management of steroid tapers in asthmatic patients receiving maintenance reslizumab. Abrupt reduction in doses of corticosteroids is not advised as asthmatic exacerbations may occur.

http://online.lexi.com/lco/action/doc/retrieve/docid/patch_f/6000948

http://www.cinqair.com/healthcare-providers.aspx

http://www.cinqair.com/pdf/PrescribingInformation.pdf

http://www.centerwatch.com/drug-information/fda-approved-drugs/drug/100137/cinqair-reslizumab

How does one supplement for hypophosphatemia? Vincent Do, 2017 Pharm D Candidate

The normal range of phosphate is between 2.4-4.8 mg/dL. Hypophosphatemia can be categorized into several categories:

Mild (2-2.4 mg/dl)

Moderate (1-1.9 mg/dl)

Severe (<1mg/dl)

Mild-Moderate Hypophosphatemia (1-2.4 mg/dL):

In patients who have mild-moderate hypophosphatemia, patients can be treated through dietary phosphate or oral supplementation. The amount of phosphate needed to restore serum phosphate is difficult to determine because the volume of distribution is variable, but generally patients should take 0.2-0.3 mmol/kg every 6 hours for 7-10 days with the dose range being 30-80 mmol/day. Patients are generally asymptomatic.

Name	Quantity	Phosphate	Sodium (mEq)	Potassium (mEq)
Skim Milk	8 oz	8 mmol (250mg)	3	5
PHOS-Nak	Packet	8 mmol (250mg)	6.9	7.1
K-Phos-Neutral	Tablet	8 mmol (250mg)	13	1.1
Neutro-Phos	Packet	8 mmol (250mg)	7.1	7.1

The dose limiting adverse event for oral supplements is osmotic diarrhea. Skim milk avoids the diarrhea in patients who are not lactose intolerant.

Severe Hypophosphatemia (<1mg/dl):

Patients who have severe hypophosphatemia should be treated with intravenous phosphate. Signs and symptoms of severe hypophosphatemia are as follows: weakness, rhabdomyolysis, respiratory compromise/failure, CHF, paresthesias, confusion, stupor, seizures, coma, hemolysis, platelet dysfunction, metabolic acidosis. Supplementation should be provided until serum phosphorus levels reach > 2 mg/dl and the patient is asymptomatic.

Name	Quantity	Phosphate	Sodium (mEq)	Potassium (mEq)	Dose
Sodium Phosphate	3mM	3 mmol (93mg)	4	0	15mM in 250mL D5W Premix: Infuse over 3.3-4 hours 30mM: Follow first 15mM infusion with a second 15mM infusion each over 3.3-6 hours
Potassium Phosphate	3mM	3 mmol (93mg)	0	4.4	15mM in 250mL of NS or D5W: Infuse over 3.3-6 hours[a] 30mM: Follow first 15mM infusion with a second 15mM infusion each over 3.3-6 hours
Sodium Glycerophosphate (Sodium glycophos)[b]	1mM	1 mmol (31mg)	2	0	15mM in 250mL of NS: Infuse over 3.3-4 hours 30mM: Follow first 15mM infusion with a second 15mM infusion each over 3.3-6 hours

a Pharmacy mixes sodium phosphate, but premixes are also available as 15mM in 250 mL NS

b Sodium glycophos should only be used when there is a critical shortage of sodium and potassium phosphate

Precautions	Monitoring Parameters	Risks with IV phosphate infusion
• Do not exceed 7m-mol/hr infusion for any of the three formulations • Do not infuse any of these formulations in the same line as calcium containing solutions [a]	• Monitor serum calcium, phosphate, potassium, sodium, magnesium, and creatinine at least every 6 hours[b] • Telemetry may also be recommended • It is recommended that serum phosphate should be followed for 2-3 days after initial treatment and to treat as needed[c]	• Acute severe life-threatening hypocalcemia, with tetany, seizures, electrocardiogram changes and shock • Overtreatment resulting in hyperphosphatemia and hyperkalemia secondary to potassium phosphate formulations

[a] There is a risk of precipitation of calcium and phosphate in the line if calcium and phosphate products are infused together

[b] Some recommend monitoring phosphorous levels as soon as 2-4 hours after administering a dose because phosphorus can quickly shift between compartments within the body and serum concentrations can fluctuate.

[c] Although phosphate may normalize in the first day, the likelihood of recurrence of hypophosphatemia over the next 2 days is high.

Of Note:

- In *kidney failure*, the dose of phosphate replacement is recommended to be reduced by at least 50%.
- There are no dose adjustments for hepatic impairment.
- Phosphate therapy can exacerbate hypocalcemia.
- Phosphate therapy in hypercalcemic patients can result in calcium-phosphate precipitation, nephrocalcinosis, and acute kidney injury.
- The product of serum total Ca and PO_4 in mg/dL ($Ca*PO_4$) should be less than 55.
- If the patient's albumin is abnormal, calculate the $Ca*PO_4$ product with corrected calcium where corrected calcium = total calcium + 0.8(4.0-albumin).
- May require a medication to lower calcium before supplementing phosphate.
- If the patient is *hypokalemic*, using potassium containing phosphate supplements is preferred.
- If the patient is *hyperkalemic*, using sodium containing phosphate supplements are preferred.
- Avoid sodium containing phosphate supplements if the patient is *volume overloaded.*
- Vitamin D is also required for phosphate absorption. If a patient is Vitamin D deficient, then they should be supplemented to assist in absorbing phosphate.
- A vitamin D serum level of 20-50 ng/mL is considered normal for healthy people.
- Magnesium has also been linked to hypophosphatemia so supplementing magnesium may also be necessary.

Sources:

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