Desferoxamine (desferrioxamine) mesilate Intravenous Infusion for Adults

Who can administer

May be administered by registered competent doctor or nurse/midwife

Important information

- **Monitoring** requirements - see overleaf
- **Rapid** administration may lead to flushing, hypotension and acute collapse
- **Care** should also be taken when **flushing IV lines** to avoid the sudden infusion of residual desferoxamine which may be present in the dead space of the line as this may lead to acute collapse

Available preparations

Desferal 500mg vial

Reconstitution

Water for injection

5ml per 500mg vial

Infusion fluids

Sodium chloride 0.9% or Glucose 5%

Methods of intravenous administration

Continuous intravenous infusion (administer using an electronically controlled infusion device)
For the treatment of acute iron poisoning

- The volume of fluid to be used for intravenous infusion is not critical, as long as the recommended rate of administration is not exceeded [(ref 1)] - if a 50ml infusion volume is used the residual volume in the infusion line must be flushed through at the same rate to avoid significant underdosing
- Administer at a suitable rate according to dosage instructions

Continuous subcutaneous infusion

- This is the preferred route for the treatment of chronic iron overload [(ref 1)] - see under dose

Dose in adults

Acute iron overload/poisoning

- Recommended dose is 15mg per kg per hour which should be reduced as soon as the situation permits, usually after 4 to 6 hours, until 80mg per kg has been given
- At this point, reassess the patient, in particular noting whether clinical features and metabolic acidosis have improved. If these have not resolved, it may be reasonable to continue deferoxamine for another four hours before assessing again. Discuss with Poison Centre [(ref 2)]
- See also under 'further information' for more details, and for information on discontinuation of therapy

Chronic iron overload

- This treatment should be initiated by a practitioner specialised in this area
- The **subcutaneous route** is the preferred method of administration for this indication
- Can be given by **continuous intravenous infusion** in patients who cannot use the subcutaneous route, or in those who have cardiac problems secondary to iron overload
- When used for this purpose, it is supplied by Baxter Healthcare directly to the patient's home.
- It is prescribed by a hospital doctor, on out-patient prescriptions which are co-ordinated by the Hospital Pharmacy Department
- Desferoxamine should be commenced after the first 10-20 blood transfusions, or when the serum ferritin levels reach 1,000nanograms/mL
- The lowest effective dose should be used
- To assess the response to chelation therapy, 24 hour urinary iron excretion may initially be monitored daily and the response to increasing doses of desferoxamine established
- Once the appropriate dose has been established, urinary iron excretion may be assessed at intervals of a few weeks
- Alternatively the average daily dose may be adjusted according to the ferritin value to keep the therapeutic index less than 0.025 (i.e. average daily dose (mg/kg) of desferoxamine divided by the serum ferritin (microgram/L) below 0.025)
- **The average daily dose (ADD) is usually between 20 and 60mg/kg**
- Since most patients take the drug less than 7 days per week, **the actual dose per infusion usually differs from the average daily dose**; e.g. if an average daily dose of 40mg/kg/day is required and the patient wears the pump 5 nights per week, each infusion should contain 56mg/kg
- In general, patients with a serum ferritin level of <2,000ng/mL require an ADD of about 25mg/kg/day, and those with a serum ferritin level between 2,000 and 3,000ng/mL require an ADD of about 35mg/kg/day
- Patients with higher serum ferritin may require an ADD of up to 55mg/kg/day
- It is inadvisable to regularly exceed an average daily dose of 50mg/kg except when very intensive chelation is needed in patients who have completed growth
- If ferritin values fall to less than 1,000ng/mL, the risk of desferoxamine toxicity increases; it is important to monitor these patients closely and perhaps to consider reducing the total weekly dose
- **Concomitant use of ascorbic acid - see further information**

Other indications - see manufacturer's SPC

- Diagnosis of iron storage disease and certain anaemias
- Treatment of aluminium overload in patients with terminal renal failure
- Treatment of aluminium overload in patients on maintenance haemodialysis or haemofiltration
- Diagnosis of aluminium overload

Renal impairment

- Desferrixoxamine should be used with caution in patients with **renal dysfunction** since the metal complexes are excreted mainly via the kidneys. In these patients, dialysis will increase the elimination of chelated iron and aluminium
- Contraindicated in anuria or severe renal disease [(ref 2)]

Monitoring

Long-term treatment

- **Ophthalmological and audiological tests** should be carried out both prior to the institution of desferoxamine, and at three-monthly intervals during treatment particularly if ferritin levels are low

- By keeping the ratio of mean daily dose (mg/kg) of Desferoaxmine divided by the serum ferritin (micrograms/L) below 0.025 the risk of audiometric abnormalities may be reduced in thalassaemia patients
- If disturbances of vision or hearing do occur, treatment with Desferoxamine should be stopped
- Such disturbances may be reversible
- If Desferoxamine therapy is reinstituted later at a lower dosage, close monitoring of ophthalmological/auditory function should be carred out
- Monitor cardiac function if combined Vitamin C and deferoxamine are being used

Further information

Acute iron overload

- Haemodialysis may be required if the patient is in renal failure as the ferrioxamine complex formed must be renally excreted
- Theoretically, 100mg Desferoxamine can chelate 8.5mg of ferric iron
- It should be noted that the serum iron level may rise sharply when the iron is released from the tissues

Discontinuation of desferoxamine treatment after treatment of acute iron overload

- The following criteria are believed to represent appropriate requirements for the cessation of treatment
- Treatment should be continued until all of the following criteria are satisfied
- The patient must be free of signs or symptoms of systemic iron poisoning: ideally, a corrected serum iron level should be normal or low (when iron levels fall below 100 microgram/dL). Given that laboratories cannot measure serum iron concentrations accurately in the presence of desferoxamine, it is acceptable to discontinue desferoxamine when all other criteria are met if the measured serum iron concentration is not elevated
- Repeat abdominal xray should be obtained in patients who initially demonstrated multiple radiopacities to ensure they have disappeared before desferoxamine is discontinued because they serve as a marker for continued iron absorption
- If the patient initially developed vin-rose coloured urine with desferoxamine therapy, it seems reasonable that urine colour should return to normal before halting desferoxamine (absence of vin-rose-coloured urine is not sufficient by itself to indicate discontinuation of desferoxamine)

Concomitant use of ascorbic acid (vitamin C) - chronic iron overload only

- Patients with iron overload usually become Vitamin C deficient, probably because iron oxidises the vitamin
- As an adjuvant to chelation therapy, Vitamin C (up to a maximum of 200mg daily given in divided doses) may be given
- Vitamin C therapy should only be started after an initial month of desferoxamine therapy
- Viamin C increases the availability of iron for chelation
- Cardiac function should be monitored during combined therapy
- Vitamin C should not be given to patients with cardiac failure

Storage

- Store below 25^{0}C

References

SPC July 2018

1: Injectable medicines administration guide, Medusa, assessed online on 2nd February 2023

2: Toxbase, assessed online on 2nd February 2023

Therapeutic classification

Chelating agent