MESNA

Indications/Uses

Prophylaxis against urothelial toxicity.

Dosage/Direction for Use

Adult : PO Calculate dosage equivalent to 40% w/w of the IV bolus dose of oxazaphosphorine (ifosfamide or cyclophosphamide), given 2 hours before, then 2 and 6 hours after antineoplastic admin (total 3 doses). IV Calculate dosage equivalent to 20% w/w of the IV bolus dose of oxazaphosphorine (ifosfamide or cyclophosphamide), given simultaneously over 15-30 minutes. Repeat dose at 4 and 8 hours after the first dose. Dose may increase to 40% of the antineoplastic dose, given for 4 doses at 3 hourly intervals (0,3,6,9 hours), if necessary.

Dosage Details

Intravenous

Prophylaxis against urothelial toxicity

Adult: Calculate dosage equivalent to 20% w/w of the IV bolus dose of oxazaphosphorine (ifosfamide or cyclophosphamide), given simultaneously over 15-30 minutes. Repeat dose at 4 and 8 hours after the first dose. Dose may increase to 40% of the antineoplastic dose, given for 4 doses at 3 hourly intervals (0,3,6,9 hours), if necessary.

Child: Shortened interval between doses and/or increased individual doses may be required.

Oral

Prophylaxis against urothelial toxicity

Adult: Calculate dosage equivalent to 40% w/w of the IV bolus dose of oxazaphosphorine (ifosfamide or cyclophosphamide), given 2 hours before, then 2 and 6 hours after antineoplastic admin (total 3 doses).

Child: Shortened interval between doses and/or increased individual doses may be required.

Administration

May be taken with or without food.

Incompatibility

IV: Incompatible with platinum derivatives (e.g. carboplatin, cisplatin, nitrogen mustard) and epirubicin.

Contraindications

Hypersensitivity.

Special Precautions

Patient with autoimmune disorders, urothelium damage associated with oxazaphosphorines or pelvic irradiation, conditions associated with inadequate response at standard doses (e.g. history of

urinary tract disease), history of hypersensitivity to thiol compounds. Children. Pregnancy and lactation.

Adverse Reactions

Significant: Dermatological toxicities [e.g. rash with eosinophilia and systemic symptoms (DRESS), Stevens-Johnson syndrome, toxic epidermal necrolysis]; haematuria.

Blood and lymphatic system disorders: Lymphadenopathy.

Cardiac disorders: Palpitations, chest pain, dyspnoea.

Eye disorders: Conjunctivitis, photophobia, blurred vision.

Gastrointestinal disorders: Abdominal pain or colic, diarrhoea, nausea, vomiting, dry mouth, mucosal irritation, constipation, flatulence, gingival bleeding, epigastric pain or burning.

General disorders and administration site conditions: Fatigue, malaise, pyrexia, infusion site reactions (IV), influenza-like illness.

Hepatobiliary disorders: Increased transaminase levels.

Immune system disorders: Bronchospasm.

Metabolism and nutrition disorders: Decreased appetite.

Musculoskeletal and connective tissue disorders: Arthralgia, myalgia, back pain, pain in extremity, pain in jaw, rigors.

Nervous system disorders: Headache, light headedness, lethargy or drowsiness, dizziness, paraesthesia, hyperesthesia, hypoesthesia, syncope.

Psychiatric disorders: Disturbance in attention.

Renal and urinary disorders: Dysuria.

Respiratory, thoracic and mediastinal disorders: Epistaxis, nasal congestion, cough, laryngeal discomfort, pleuritic pain, hypoxia, respiratory distress.

Skin and subcutaneous tissue disorders: Rash, pruritus, hyperhidrosis.

Vascular disorders: Flushing.

Potentially Fatal: Hypersensitivity (e.g. anaphylaxis, severe bullous and ulcerative skin).

Pregnancy Category (US FDA)

IV/Parenteral/PO: B

Patient Counseling Information

This drug may cause drowsiness and dizziness, if affected, do not drive or operate machinery.

MonitoringParameters

Monitor urine for haematuria and proteinuria.

Overdosage

Symptoms: Nausea, vomiting, abdominal pain or colic, diarrhoea, headache, fatigue, limb and joint pains, rash, flushing, hypotension, bradycardia, tachycardia, paraesthesia, fever, bronchospasm.

Lab Interference

May cause false positive reactions in nitroprusside sodium-based urine tests (e.g. dipstick tests) for ketone bodies. May cause false positive reactions in Tillman's reagent-based urine screening tests for ascorbic acid. May interfere with enzymatic creatine phosphokinase (CPK) activity tests that use a thiol compound for CPK reactivation thus, may result in a falsely low CPK level.

Action

Description: Mesna is first oxidized into mesna-disulphide or dimesna which is then reduced back into mesna in the renal tubuli epithelium. In the urine, mesna supplies free thiol group that reacts chemically with urotoxic oxazaphosphorine metabolites (e.g. acrolein) of ifosfamide and cyclophosphamide thereby reducing incidence of toxicities (e.g. haemorrhagic cystitits and haematuria) and enhancing excretion of cysteine which may increase uroprotective effect.

Pharmacokinetics:

Absorption: Bioavailability: 58% (range: 45-71%) as free mesna. Time to peak plasma concentration: 1.5-4 hours (free mesna).

Distribution: Volume of distribution: 0.65 ± 0.24 L/kg. Plasma protein binding: 60-75%.

Metabolism: Rapidly metabolised via oxidation into mesna-disulphide or dimesna in the intravascular compartment.

Excretion: Via urine (32% as mesna, 33% as dimesna). Elimination half-life: Approx 22 minutes (mesna), approx 70 minutes (dimesna).

Chemical Structure

Click on icon to see table/diagram/image

Storage

Store between 20-25°C.

MIMS Class

Antidotes & Detoxifying Agents / Supportive Care Therapy

ATC Classification

V03AF01 - mesna ; Belongs to the class of detoxifying agents used in antineoplastic treatment.