SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Magnesium Sulfate 1g/10ml Solution for Injection

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Magnesium Sulfate Heptahydrate 10% w/v

For full list of excipients, see section 6.1

3 PHARMACEUTICAL FORM

Sterile solution for injection

A clear colourless solution free from visible particulate contamination

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Treatment of magnesium deficiency in hypomagnesaemia.

Treatment of magnesium deficiency where the oral route of administration may be inappropriate.

To prevent further seizures associated with eclampsia.

4.2 Posology and method of administration

By intravenous infusion.

Adult, Children and the Elderly

35-50 mmol in 1 litre of 5% Glucose Intravenous Infusion or 0.9% w/v Sodium Chloride Injection given over a period of 12 – 24 hours.

Patients with renal impairment, the dosage will need to be reduced.

4.3 Contraindications

Hypersensitivity to the Magnesium sulfate heptahydrate or to any of the excipients listed in section 6.1.

Hepatic encephalopathy, hepatic failure or renal failure.
Parenteral magnesium salts should generally be avoided in patients suffering from heart block.

4.4 Special warnings and precautions for use

Magnesium salts should be administered with caution to patients with impaired renal function; appropriate reductions in dosage should be made (Refer to 'Posology and Method of Administration' above).

Parenteral magnesium should be used with caution in individuals with myasthenia gravis, to prevent an exacerbation of the condition or the precipitation of a myasthenic crisis. A risk-benefit assessment should be performed in individual cases prior to initiation of treatment.

Magnesium sulfate should not be used in hepatic coma if there is risk of renal failure.

Serum calcium levels should be routinely monitored in patients receiving magnesium sulfate.

4.5 Interaction with other medicinal products and other forms of interaction

Muscle Relaxants: non-depolarising muscle relaxants such as tubocurarine are enhanced by parenteral magnesium salts.

Calcium channel blockers such as nifedipine or nimodipine may rarely lead to a calcium ion imbalance and could result in abnormal muscle function.
Nifedipine: profound hypotension was produced in two women who were given oral Nifedipine.

Magnesium salts should also be administered with caution to those receiving digitalis glycosides. Parenteral administration of magnesium salts may enhance the effects of neuromuscular blocking agents or of central nervous system depressants.

CNS Depressants: When barbiturates, opiates, general anaesthetics, or other CNS depressants are administered concomitantly with magnesium sulfate, dosage of these agents must be carefully adjusted because of the additive central depressant effects.

Antibacterials: The neuromuscular blocking effects of parenteral magnesium and aminoglycoside antibacterials may be additive.

Magnesium may cause severe and unpredictable potentiation of neuromuscular blocking agents.

The muscle stimulating effects of Barium toxicity are reduced by magnesium.

4.6 Fertility, pregnancy and lactation

Safety in human pregnancy has not been established, however, in the medical emergency of a patient having Eclampsia, Magnesium Sulfate can be administered to relieve this condition, which may be life threatening to both mother and baby.
As with all drugs it is not advisable to administer magnesium sulfate during pregnancy or breastfeeding unless considered essential, and it must be administered under medical supervision.

Magnesium crosses the placenta. When used in pregnant women, foetal heart rate should be monitored and use within 2 hours of delivery should be avoided.

Magnesium sulfate can cause skeletal adverse effects when administered continuously for more than 5 to 7 days to pregnant women. There are retrospective epidemiological studies and case reports documenting fetal adverse effects including hypocalcaemia, skeletal demineralization, osteopenia and other skeletal adverse effects with maternal administration of magnesium sulfate for more than 5 to 7 days. The clinical significance of the observed effects is unknown.

If prolonged or repeated exposure to magnesium sulfate occurs during pregnancy monitoring of neonates for abnormal calcium or magnesium levels and skeletal adverse effects should be considered.

4.7 Effects on ability to drive and use machines

No studies on the effects on the ability to drive and use machines have been performed

4.8 Undesirable effects

In patients with impaired renal function there may be sufficient accumulation to produce toxic effects.

Excessive administration of magnesium leads to the development of hypermagnesaemia. Symptoms of hypermagnesaemia may include nausea, vomiting, flushing of the skin, thirst, hypotension due to peripheral vasodilatation, drowsiness, confusion, loss of tendon reflexes and respiratory depression due to neuromuscular blockade, muscle weakness, respiratory depression, cardiac arrhythmias, coma, and cardiac arrest.

Hypersensitivity reactions. Hypocalcaemia.

Metabolism and nutrition disorders

Electrolyte/fluid abnormalities (hypophosphataemia, hypertonic dehydration)

There have been isolated reports of maternal and fetal hypocalcaemia with high doses of magnesium sulfate (see section 4.6).

Reporting of suspected adverse reactions
Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the Yellow Card Scheme at: www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store.

4.9 Overdose

The symptoms of progressive overdosage could be expected to be bradycardia, loss of deep tendon reflexes, heart block, respiratory paralysis and finally cardiac arrest.

Treatment should include artificial respiration if necessary, intravenous calcium gluconate and dialysis if renal function is reduced.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Mineral Supplements,

ATC code: A12CC 02.

Magnesium is the second most abundant cation in intracellular fluid and is an essential body electrolyte. Magnesium is a factor in a number of enzyme systems, and is involved in neurochemical transmission and muscular excitability.

Parenterally administered magnesium sulfate exerts a depressant effect on the central nervous system and acts peripherally to produce vasodilation.

Hypermagnesemia can cause the following ECG changes: prolonged PR, QRS and QT intervals.

5.2 Pharmacokinetic properties

The concentration of magnesium in plasma is normally tightly regulated in the range of 0.75-0.95mmol/l.

Small and clinically irrelevant amounts are excreted in breast milk. The major excretory pathway of magnesium is renal, and both oral and intravenous loads are rapidly eliminated in this way. In renal impairment there may be accumulation of magnesium.

The potential for magnesium toxicity is greater in parenteral administration than with oral dosing.

At plasma concentrations of up to 4mmol/l, the only adverse effect likely to be seen is flushing due to peripheral vasodilatation. At about 4-5mmol/l, concentration-dependant toxicity is heralded by loss of deep-tendon reflexes, then successively by hypotension, bradycardia and ultimately neuromuscular blockade leading to respiratory arrest.

When given intravenously, Magnesium Sulfate has an immediate onset of action, and its duration of activity is about 30mins.

5.3 Preclinical safety data

This product has been available for many years and its side effects and clinical profile are well-understood, therefore no further data is provided.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Water for Injection

6.2 Incompatibilities

The important possible interactions are listed below.

Alkali carbonates, bicarbonates and hydroxides, calcium, clindamycin phosphate, hydrocortisone sodium succinate, phosphates, polymyxin B, procaine, salicylates and tartrates.

Streptomycin sulfate and tetramycin sulfate activity is inhibited by magnesium ions.

6.3 Shelf life

60 months

6.4 Special precautions for storage

Do not store above 25° C.

Keep out of the sight and reach of children.

6.5 Nature and contents of container

Colourless clear ampoules of neutral (Type 1) glass containing 2ml or 10ml of the solution.

Packed in cartons of 10 ampoules.

6.6 Special precautions for disposal

None stated

7 MARKETING AUTHORISATION HOLDER

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8 MARKETING AUTHORISATION NUMBER(S)

PL 01883/6136R

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 30 August 1989

10 DATE OF REVISION OF THE TEXT

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