

National Essential Medicine List Medication Review Process

Adult Hospital Level

Component: Anaesthesia

Date: September 2014

Medication: 20% lipid emulsion.

Indication: Cardiovascular collapse secondary to local anaesthetic systemic toxicity.

Context: New medicine. Not previously included on EML.

The treatment of local anaesthetic systemic toxicity (LAST) has previously been largely symptom based and supportive in nature. The onset of cardiovascular collapse and arrest were very hard to resuscitate and in many instances terminally irreversible. The guidelines would advocate the use of poorly effective, expensive and toxic antiarrhythmic drugs e.g. bretyllium, eventually requiring cardio-pulmonary bypass.

The discovery of intravenous lipid emulsion therapy (ILE) as therapy for LAST has changed this ¹. It is not possible to ethically do a human randomized controlled trial (RCT) on LAST as the lethal consequences to the control group, and the risk exposure to trial participants in general, will be unacceptable. There is therefore no Level I evidence in humans.

Since the first human case report was published in 2006 ² there have been a large number of reports published, initially limited to LAST, but recently including a large variety of other overdoses. Cases of success and failure are also informally reported on the website www.lipidrescue.org, and whereas this is not as scientifically rigorous as a RCT, it does contribute towards our knowledge of ILE therapy. Due to the aforementioned unlikelihood of there ever being a RCT in humans addressing this issue, a registry like this will be the closest we come to a large cohort of patients given ILE. In this sense and in the fact that toxicity is so difficult to predict, the treatment with ILE has been likened to the introduction of dantrolene for the treatment of malignant hyperthermia under anaesthesia. ³

There have been reviews of the human cases, as well as the animal studies that have been conducted. These can be found in the South African literature ⁴, as well as abroad. ^{5 6} Recent reviews have focused on the use of ILE for the treatment of toxicities other than LAST, with particular relevance to overdoses with a number of psychotropic drugs, beta blockers and calcium channel blockers. ^{7 8 9}

Guidelines:

The use of ILE features prominently in the Association of Anaesthetists of Great Britain & Ireland (AAGBI) guidelines since 2010 and can be viewed at http://www.aagbi.org/sites/default/files/la_toxicity_2010_0.pdf

This Safety Guideline is endorsed by the Australian and New Zealand College of anaesthetists (ANZCA).

In the USA the guidelines have been published by the American Society of Regional Anesthesia and Pain Medicine (ASRA). ^{10 11}

In Europe it forms part of the Helsinki Declaration on Patient Safety in Anaesthesiology. ¹²

It is recommended in the ACLS (advanced cardiac life support) guidelines of 2010, the latest edition. ¹³

The safety aspects

As ILE is not a new drug, its safety profile in the acute setting is well established, with only the very rare incidence of allergic reaction being relevant here^{14 6}. With its chronic use in the critical care setting other side effects become relevant, but these are not applicable to its acute use in the treatment of LAST.¹⁵

References:

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