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Magnesium in tetanus: A systematic review of the literature 1980-2017

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Tetanus remains a dangerous problem in many low to middle-income countries, despite the availability of an effective vaccine. Death usually arises from autonomic dysfunction and spasm-related respiratory failure. Heavy sedation with benzodiazepines therefore forms the cornerstone of treatment. However, this necessitates mechanical ventilation, often unavailable where tetanus burden is highest, and may explain why tetanus mortality has remained >40% in the last 50 years. Magnesium sulphate has been suggested as a promising therapeutic alternative, but only one inconclusive meta-analysis has been published on its use in tetanus. We therefore performed an up-to-date systematic literature review of all primary studies examining the effects of magnesium sulphate on mortality, length of stay, spasm and autonomic control and potential toxicity in tetanus patients. Two independent reviewers carried out a set search on PubMed and Web of Knowledge. Identified texts underwent abstract and full text review, with further review of relevant reference lists. Data was then extracted for comparison. No study showed a mortality benefit. However, magnesium was demonstrated to significantly shorten duration of hospital stay, reduce muscle spasms, lower maximum systolic blood pressure and heart rate, and reduce the need for additional drugs such as benzodiazepines and inotropes. Magnesium at therapeutic serum levels was not associated with any clinically significant side effect, though disagreement exists as to whether magnesium causes hypoventilation. Magnesium appears both safe and effective in managing tetanus. Future work should establish regimens preserving respiratory muscle function, to allow widespread use of magnesium in units without access to ventilatory support.

Biography

Catherine Hsu is final-year medical students at the University of Cambridge with an interest in infectious disease medicine and global health. They undertook their elective at the Oxford University Clinical Research Unit (OUCRU) in Vietnam, under the guidance of Dr Louise Thwaites (senior clinical research fellow and member of the Emerging Infections group at OUCRU). Catherine completed a BA researching the oncogenic potential of human herpesvirus-8 and has also presented her work on neglected tropical diseases at a national level. Su Ling completed her BA in neuroscience and is particularly interested in neurological infections.

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