

Gentamicin Dosing in Therapeutic Hypothermia; a Quality Improvement Initiative

Abstract:

Sir,

We read with interest a number of articles on gentamicin dosing in neonates treated with therapeutic hypothermia¹⁻³. Therapeutic hypothermia has now become the standard of care for newborn infants with hypoxic-ischaemic encephalopathy. Many of these infants concurrently receive gentamicin. Gentamicin is nephrotoxic and ototoxic at high serum concentrations. We therefore carried out a study in The National Maternity Hospital Holles St to analyse trough and peak gentamicin levels in infants who were cooled and compared them to a control group of non-cooled infants.

A retrospective review was undertaken of infants who were cooled in the National Maternity Hospital, Holles St, between March 2013 and February 2015. Infants were included if they were treated with gentamicin from birth for at least 48 hours. These infants were compared to a group of infants admitted to the NICU who were also treated with gentamicin. All infants were at least 36 weeks gestation. A total of 43 infants were cooled during the defined period. Gentamicin trough levels were available on 34 (79%) of these infants. The median trough level was 1.65 (IQR 1.13), compared to a median trough level of 0.85 (IQR 0.65) in 42 control infants ($p < 0.05$). Of note 29% of the cooled group had a trough level which was greater than the accepted level of 2mg/L, compared to only 7% of the control group. Peak values in both groups were therapeutic.

Gentamicin trough levels were significantly higher in cooled infants. This has led to a change in our current practice. Cooled infants now receive gentamicin on a 36 hourly dosing schedule as opposed to 24 hourly and a trough level is taken prior to the 2nd dose as opposed to the 3rd dose.

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