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Safety of lipid emulsion in very low-birthweight infants according to cytokine level

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Background: The aim of this study was to verify whether lipid emulsion treatment aggravates infection and inflammation in very low-birthweight (VLBW) infants.

Study Design: Very low-birthweight (<1500 g) infants born at <32 weeks gestational age between October 2013 and October 2014 at Dokkyo Medical University Hospital (Mibu, Tochigi, Japan) were treated with or without i.v. nutrition with a lipid emulsion. Infants were excluded who had congenital abnormalities, could not receive i.v. nutrition because of poor general condition, or on physician decision. Lipid emulsion with purified soybean oil was initiated at 0.5 g/kg/day on postnatal day 1. The dose was increased to 1 g/kg/day, and then to 1.5 g/kg/day (maximum dose). Blood tests were performed before (day 1) and after (day 8) initiation of lipid emulsion treatment. Interleukin (IL)-6, IL-8, monocyte chemoattractant protein 1 (MCP-1), tumor necrosis factor- α (TNF- α), C-reactive protein (CRP), total bilirubin (T-Bil), direct bilirubin (D-Bil) and insulin were measured. Changes in respiratory condition, amount of oxygen used, and phototherapy duration were investigated.

Results: A total of 17 treated and 15 untreated VLBW infants were enrolled. IL-6, IL-8, MCP-1, TNF- α , CRP, T-Bil, D-Bil and insulin on days 1 and 8; respirator or surfactant use; amount of oxygen used; and phototherapy duration were not significantly different between the two groups.

Conclusions: Lipid emulsion treatment did not increase inflammatory cytokine levels or aggravate respiratory disorders. Lipid emulsions, if proven safe, could be used to treat VLBW infants soon after birth, which may prevent extrauterine growth restriction and improve intellectual development prognosis.

Biography

Go Ichikawa has completed his PhD from Dokkyo Medical University. He is the Director of Pediatrics department at Nasu Red Cross Hospital.

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