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The effect of prematurity on caffeine metabolism in preterm infants

Caffeine is a methylxanthine and a first-line pharmacotherapy agent in apnea of prematurity. Caffeine is preferable to theophylline because of its fewer adverse effects and a wider therapeutic window. In general, measurement of serum caffeine concentration is not required in preterm neonates because a majority of them can maintain therapeutic levels. We present the first reported case of a preterm neonate, whose serum caffeine concentration exceeded therapeutic levels, resulting in rhabdomyolysis. Caffeine is metabolized by the hepatic cytochrome P-450 monooxygenase pathway, but its activity is lower in premature infants than in adults. Therefore, more than 85% of the administered dose of caffeine is recovered unchanged in the urine of an infant during the 1st month of life. Since we are interested in caffeine metabolism in preterm infants, we measured serum caffeine concentration in 24 preterm infants, sequentially. We addressed the relationship between caffeine metabolism and postnatal age or postmenstrual age. Our aim is to elucidate the development and systems of caffeine metabolism according to their growth. Although caffeine has been used in many NICUs, I would like to discuss caffeine metabolism in preterm infants.

Biography

Taketoshi Yoshida graduated from Toyama Medical and Pharmaceutical University and got medical license in 1994. He has completed his PhD in 2002 from Toyama University. He has performed genetic research work at Institute for Virus Research, Kyoto University and German Rheumatism Research Centre, Berlin. He is the Director of Maternal and Perinatal Center, Toyama University Hospital. He focuses on the neonatal basic and translational research at present.

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