Vitamin D Resistance in Calcium Absorption in the Intestine is a Suspected Pathomechanism Underlying Persistent Hypocalcemia in Infancy

Eiji OHTA[1)2)], Kenichirou YAMAMURA[1)], Junko YAMAMOTO[1)], Yasuhiko TAKAHASHI[1)], Kunitaka JOO[1)], Atsushi OGAWA[2)] and Shinichi HIROSE[2)]

[1)] *Departments of Pediatrics, Kyushu Kosei-Nenkin Hospital*
[2)] *Department of Pediatrics, Faculty of Medicine, Fukuoka University*

Abstract: Late onset hypocalcemia (LHP) is a rare condition in neonates that can be caused by various mechanisms. Historically, LHP is observed in babies fed with infant formula that used to formerly be available before the phosphate content in infant formula was adjusted to that found in human milk. The parathyroid function was evaluated in a boy who had convulsions due to persistent LHP in infancy from birth. He was born as a small-for-date infant and had been treated with vitamin D_3 and calcium lactate for late onset hypocalcemia. His parathyroid hormone (PTH) level was initially at the lower limits of the standard range indicative of hypo-PTH. At the age of one month, the PTH level increased to twice the higher limit of the standard range while hypocalcemia and hyperphosphatemia continued and consequently convulsions occurred. The pathomechanism underlying these convulsions were consistent with pseudohypoparathyroidism (PHP). Nevertheless, vitamin D_3 and calcium lactate were not effective, however, a restriction of dietary phosphate proved to be effective. This patient's persistent hypocalcemia was therefore not considered to be due to the function of either the parathyroid or PTH resistance, but it was likely considered to be associated with resistance to vitamin D in the adsorption of calcium in the intestine. This case therefore suggests that vitamin D resistance in the intestine should be considered as a cause of persistent LHP although further investigations are necessary to fully elucidate this potential mechanism.

Key words: **Late onset hypocalcemia, Intrauterine growth restriction, Transient pseudohypoparathyroidism of the neonate, Pseudohypoparathyroidism type 2, Vitamin D resistance in the intestine**