

When Bartter syndrome isn't the whole story: Growth hormone deficiency and exceptional catch-up growth

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Abstract

Background: Short stature and poor weight gain in Bartter syndrome are typically attributed to chronic metabolic derangements, salt wasting, and secondary acquired nephrogenic diabetes insipidus (NDI) occurs due to loss of the medullary concentration gradient. Consequently, formal endocrine evaluation for growth hormone deficiency (GHD) is frequently overlooked. We report a rare co-occurrence of Bartter syndrome, secondary NDI, and true GHD, demonstrating a remarkable therapeutic response to recombinant human growth hormone (rhGH).

Case summary: A 10-year-old girl born to consanguineous parents, a known case of Bartter syndrome, presented with a 2-year history of failure to thrive (weight 18 kg, -3.1 SD), significant short stature (height 124 cm, -2.5 SD), polyuria, polydipsia and nocturnal enuresis. Laboratory evaluation revealed persistent hypokalemia (2.5–3.2 mmol/L), hypochloremia, and metabolic alkalosis. CT KUB showed Medullary nephrocalcinosis and bilateral nephrolithiasis. Water deprivation test demonstrated failure of urinary concentration (Urine osmolality 71 mOsm/kg), with no meaningful response to desmopressin, consistent with nephrogenic diabetes insipidus. Despite metabolic stabilization and indomethacin therapy, growth failure was persistent. Investigations revealed a delayed bone age (7–8 years), low serum IGF-1 (55 ng/ml), and growth hormone in responses to stimulation with clonidine was 0.66 ng/ml and L-dopa was 0.85 ng/ml. Initiation of recombinant human growth hormone (rhGH) therapy produced marked catch-up growth of 7 cm within the first 7 months without any metabolic decompensation.

Conclusion: While severe growth failure in Bartter syndrome is commonly attributed to chronic systemic metabolic derangement, clinicians should actively evaluate for co-existing GHD when growth failure persists despite electrolyte stabilization. Timely introduction of rhGH therapy can successfully restore linear growth potential in these complex patients. [*J Assoc Clin Endocrinol Diabetol Bangladesh*, 2026;5(Suppl 1): S84]

Keywords: Bartter syndrome, Nephrogenic diabetes insipidus, Growth hormone deficiency, Hypokalemia, Nephrocalcinosis, Short stature

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