Should all nephrotics with thyroid dysfunction be treated with levothyroxine?

Kanika Kapoor · Abhijeet Saha

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Sirs,

We read with interest the recently published study in *Pediatric Nephrology* titled “Steroids combined with levothyroxine to treat children with idiopathic nephrotic syndrome (NS): a retrospective single-centre study,” by Guo et al. [1]. In their retrospective study, 73 of 164 nephrotic children had thyroid dysfunction, of who 40 were treated with steroids and levothyroxine. First, the authors observed that time to proteinuria remission was significantly shorter in the levothyroxine plus steroid group than in the group treated with steroids alone (21.05 ± 11.00 vs 26.67 ± 11.82 , $p < 0.05$). However, the mean time to remission in either group was much longer than that observed in most studies. This was probably due to the inclusion of both steroid-sensitive NS (SSNS) and steroid-resistant NS (SRNS) patients in a single group in the present study. Second, subclinical hypothyroidism is defined as a state of increased serum thyroid-stimulating hormone (TSH) concentration, with circulating thyroxine and triiodothyronine (TT3) within the population reference range [2]. Forty-four percent of patients were reported to have subclinical hypothyroidism. In groups A and B, there were 25 cases of low T3 syndrome (low TT3 and normal TSH), 11 cases of low T4 syndrome [low total thyroxine (TT4) and normal TSH], 27 cases of hypothyroxinemia (low TT3 and TT4 but normal TSH), and ten cases of hypothyroidism [low free thyroxine/free triiodothyronine (FT3/FT4) and high TSH]. None of the categories of thyroid dysfunction had increased TSH and normal T3/T4. Third, subclinical hypothyroidism is known to be due to reduced glomerular filtration rate (GFR), and as GFR decreases,

there is further decrease of thyroid hormones levels. Guo et al. did not mention estimated GFR (eGFR) of the patients in their study, which may confound their results [1]. Finally, decrease in thyroid hormones and increase in TSH is transient in patients with SSNS, and they return to normal on remission; however, this may be persistent in patients with congenital NS and those with SRNS due to massive prolonged proteinuria [3]. We studied thyroid functions in 20 children with SRNS (14 in complete remission and six in partial remission) and found six of them to have nonautoimmune subclinical hypothyroidism [3]. Four of six children with grade 2–3 subclinical hypothyroidism received thyroid hormone replacement therapy, and levels of TSH normalized in all patients on therapy.

In conclusion, thyroxine replacement therapy in children with SSNS who have proteinuria for a short duration (i.e., 2–3 weeks) may not prove beneficial in terms of the transient nature of thyroid dysfunction. The final answer would come from a double-blind placebo-controlled trial on carefully selected patient groups.

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Conflict of interest None.

References

1. Guo Q, Zhu Q, Liu Y, Zhang H, Ding Y, Zhai W, Ren X, Zhang J, Zhang Z, Yang M (2014) Steroids combined with levothyroxine to treat children with idiopathic nephrotic syndrome: a retrospective single-centre study. *Pediatr Nephrol* 29:1033–1038
2. Pearce SHS, Brabant G, Duntas LH, Monzani F, Peeters RP, Razvi S, Wemeau JL (2013) ETA guideline: management of subclinical hypothyroidism. *Eur Thyroid J* 2:215–228
3. Kapoor K, Saha A, Dubey NK, Goyal P, Suresh CP, Batra V, Upadhyay AD (2014) Subclinical non-autoimmune hypothyroidism in children with steroid resistant nephrotic syndrome. *Clin Exp Nephrol* 18:113–117

K. Kapoor · A. Saha (✉)

Division of Pediatric Nephrology, Department of Pediatrics,
Postgraduate Institute of Medical Education and Research, Dr Ram
Manohar Lohia Hospital, Room no 406, PGIMER Building, New
Delhi 201010, India
e-mail: drabhijeetsaha@yahoo.com