

MANAGEMENT OF NEWBORNS BORN TO MOTHERS WITH AUTOIMMUNE HYPOTHYROIDISM

P. CAVARZERE¹, L. PALMA¹, M. CAMILOT¹, M. VINCENZI¹, F. TEOFOLI¹, L. NICOLUSSI PRINCIPE¹, R. GAUDINO¹, V. MURRI², O. PEPAJ³, L. LUBRANO⁴, G. ROSSI⁵, A. SALLEMI⁶, E. FATTORI⁷, S. LAURIOLA⁸, F. ANTONIAZZI¹

1. Pediatric Division, Department of Pediatrics, University Hospital of Verona, Verona, Italy
2. Pediatric Division, Hospital of San Bonifacio, Verona, Italy; 3. Pediatric Division, Hospital of Villafranca, Verona, Italy
4. Pediatric Division, Hospital of Legnago, Verona, Italy; 5. Pediatric Division, Hospital of Mestre, Mestre, Italy
6. Pediatric Division, Hospital of Venezia, Venezia, Italy; 7. Pediatric Division, Hospital of Negrar, Negrar (Verona), Italy
8. Neonatal Intensive Care Unit, Department of Pediatrics, University Hospital of Verona, Verona, Italy



INTRODUCTION

Infants of mothers with autoimmune hypothyroidism (AH) are at risk of showing late-onset hypothyroidism, often not recognizable at newborn screening.

Thyroid inhibiting antibodies can pass through the placenta. It is currently unclear if they may affect the newborn's thyroid function causing hypothyroidism.

AIM

To evaluate the prevalence of AH in the mothers of children born in Veneto Region, Italy.

To verify the utility of the serum thyroid function test in newborns born from mothers with AH.

METHOD

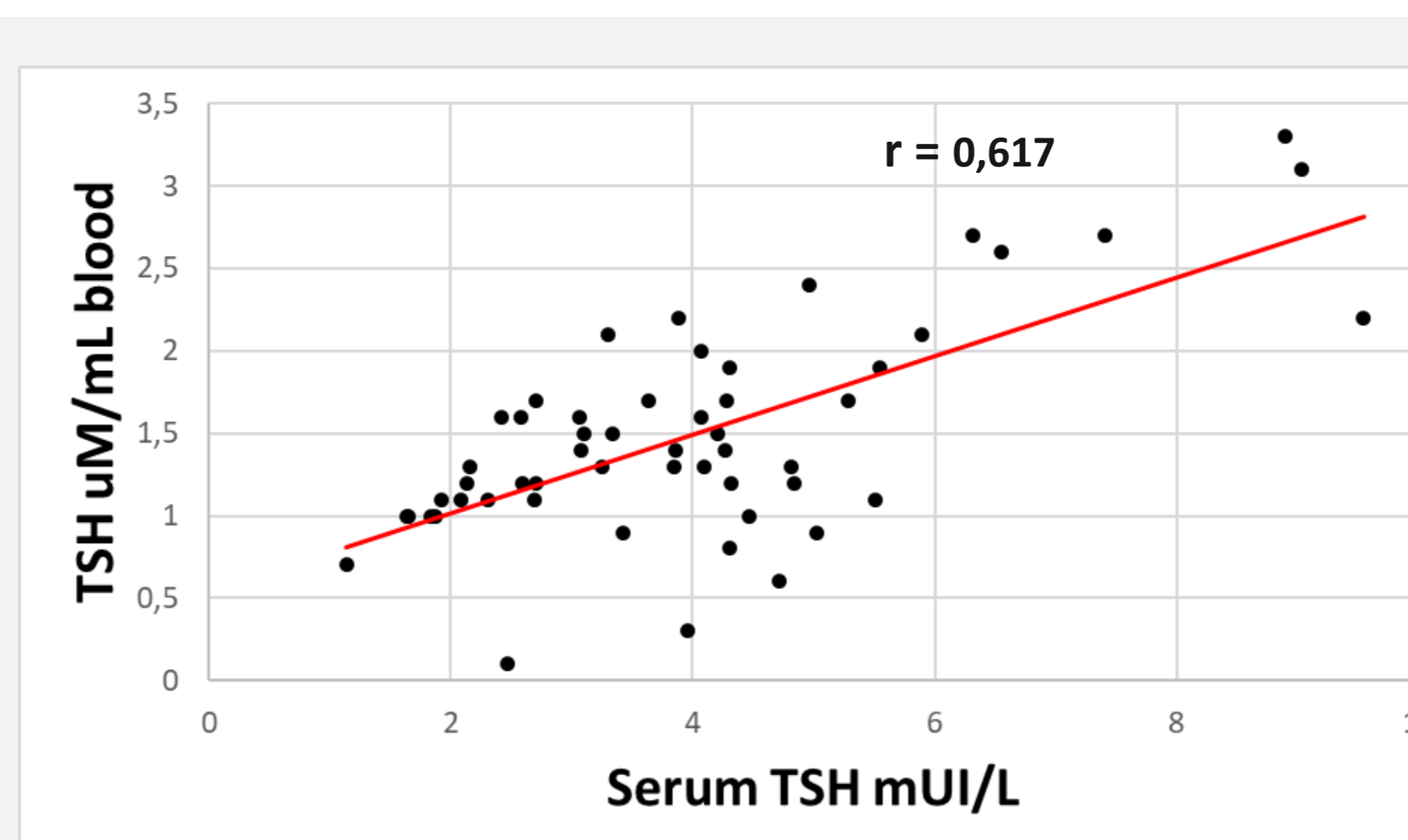
All newborns born at term, with mother suffering from AH and with negative neonatal screening for congenital hypothyroidism (CH), were tested for serum thyroid function by measurement of free thyroxine (FT4), thyroid stimulating hormone (TSH) and antibody state (TPOAb, TGAAb, TRAb) in 15th-20th day of life.

In the same session a second dried blood spot was collected.

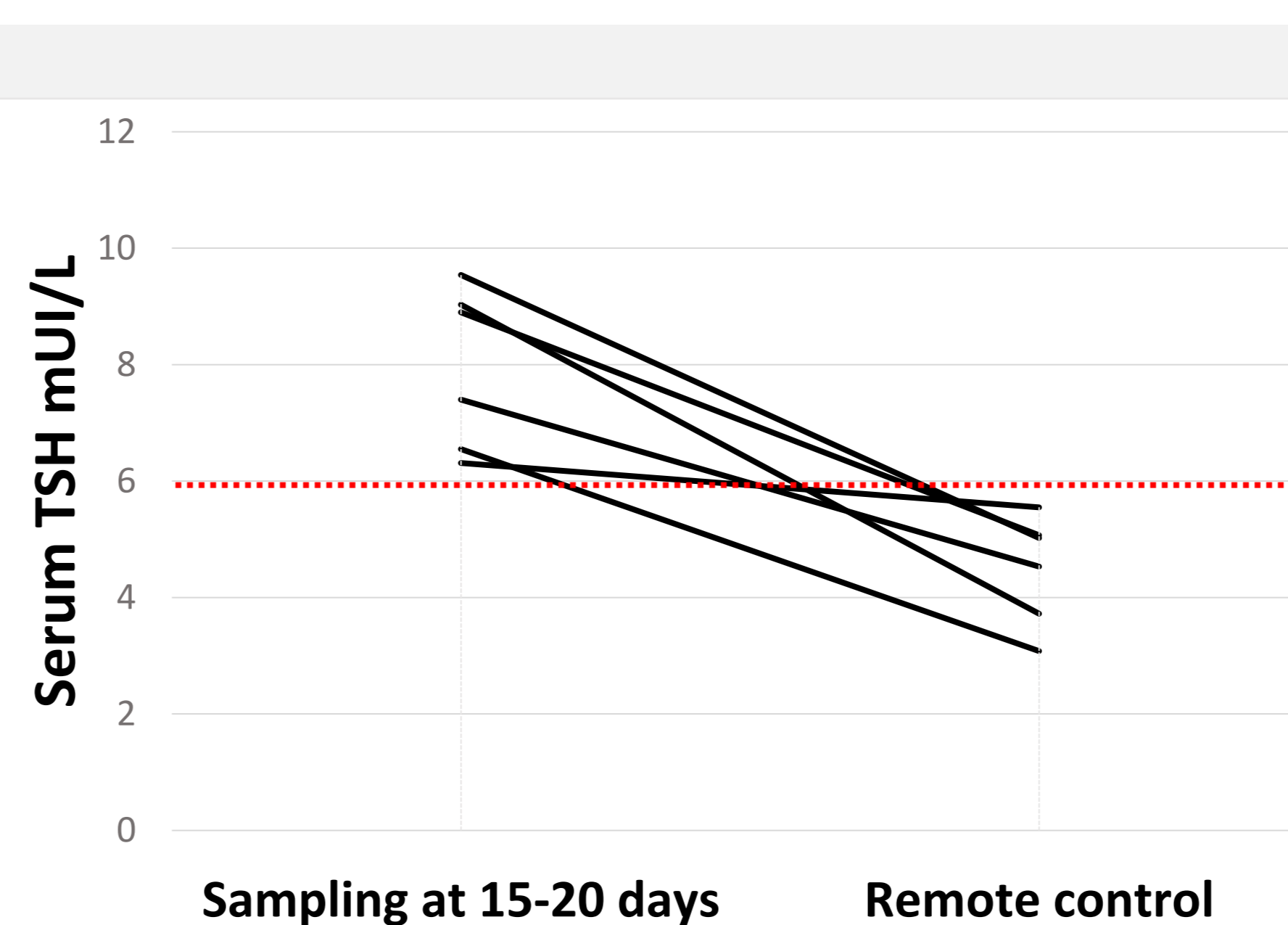
Data concerning maternal replacement therapy with L-thyroxine during pregnancy were retrospectively collected.

RESULTS

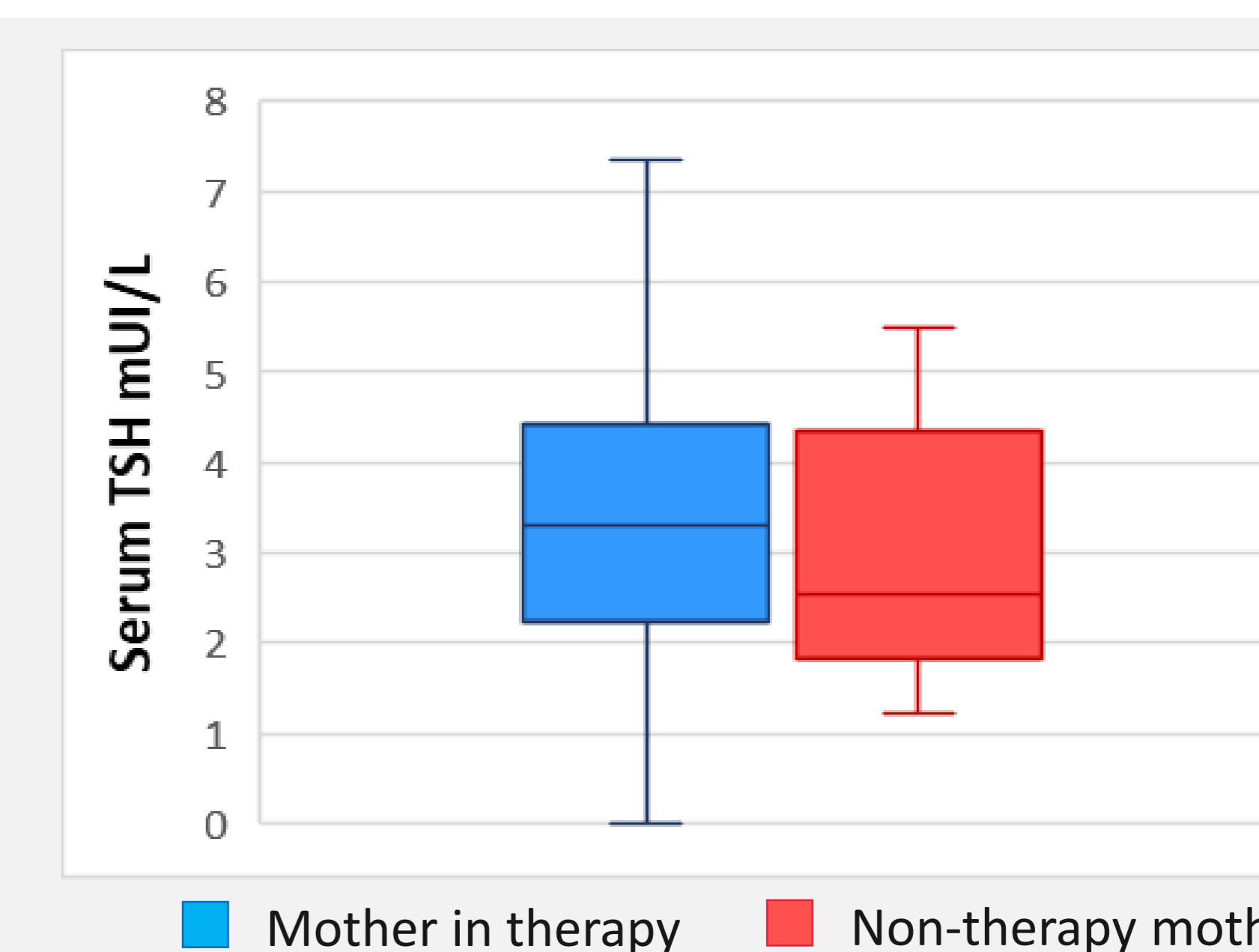
- From November 2019 to March 2020 in Verona (Italy) we found 54 newborns born to mothers with AH.
- All mothers were in a reported condition of euthyroidism during pregnancy. 69% assumed a treatment with L-T4 at the average dosage of 74 ug/day [25-187.5].
- 9% of newborns showed a slight increase in TSH on serum evaluation at 15-20 days which then returned in the normal range during follow up;; none showed an increase in TSH on the second screening test.
- No extra cases of CH were detected and no infants required replacement therapy.
- We found a good concordance between the results of serum thyroid function and the dried blood spot at 15-20 days of life.



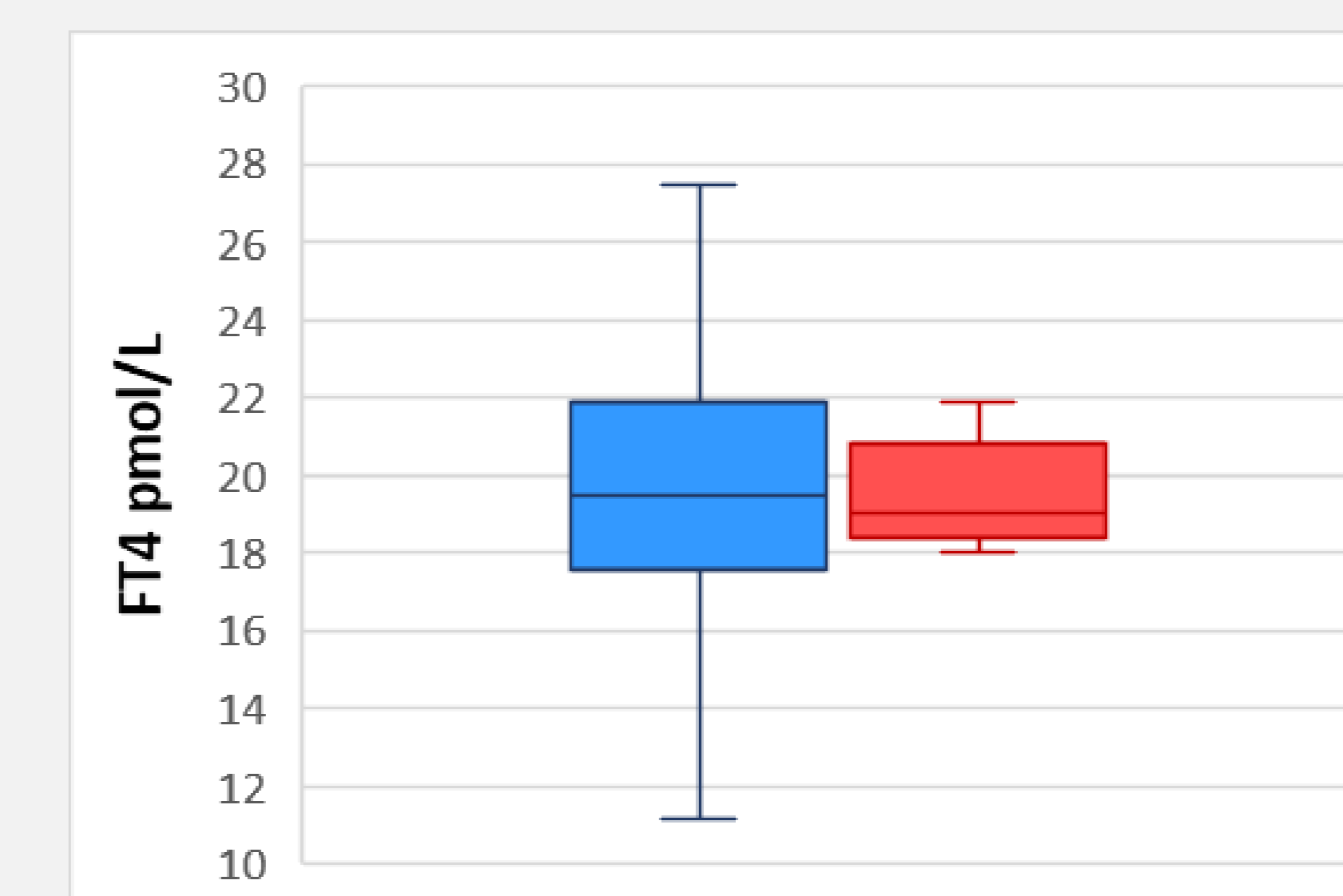
Correlation between serum TSH values and screening at 15-20 days of life ($r=0.617$, $p<0.01$)



Trend of TSH levels at sampling at 15-20 days and at a following control (performed on average at 63.7 ± 21.4 days). The dotted line corresponds to the normal value for age according to the guidelines of the European Society for Pediatric Endocrinology (ESPE) of 2014.



■ Mother in therapy ■ Non-therapy mother



Serum levels of TSH and FT4 found in patients divided according with therapy with L-T4 in their mothers during pregnancy.

CONCLUSIONS

The prevalence of maternal AH in Veneto Region (Italy) is 1:29. It is not a rare condition and the management of these newborns needs to be carefully defined. We suggest that newborns born to mothers affected by AH should be submitted to only a 2nd dried blood spot between 15-20 days of life. If hormone values result in the normal referring range, no additional test should be performed. This method is preferable to blood test because it is economically more advantageous and less invasive for the newborns.

REFERENCES

- Cassio A, Corbetta C, Antonozzi I, Calaciura F, Caruso U, Cesaretti G, et al. The Italian screening program for primary congenital hypothyroidism: Actions to improve screening, diagnosis, follow-up, and surveillance. Vol. 36, Journal of Endocrinological Investigation. J Endocrinol Invest; 2013. p. 195–203.
- Dussault JH, Fisher DA. Thyroid function in mothers of hypothyroid newborns. Obstet Gynecol. 1999 Jan;93(1):15–20
- Léger J, Olivieri A, Donaldson M, Torresani T, Krude H, Van Vliet G, et al. European society for paediatric endocrinology consensus guidelines on screening, diagnosis, and management of congenital hypothyroidism. Vol. 99, Journal of Clinical Endocrinology and Metabolism. J Clin Endocrinol Metab; 2014. p. 363–84
- McGovern M, Reyani Z, O'Connor P, White M, Miletin J. Thyroid function testing in neonates born to women with hypothyroidism. Eur J Pediatr. 2016 Dec;175(12):2015–8
- Rovelli R, Vigone MC, Giovanettoni C, Passoni A, Maina L, Corrias A, et al. Newborn of mothers affected by autoimmune thyroiditis: the importance of thyroid function monitoring in the first months of life. Ital J Pediatr. 2010;36:24.

ACKNOWLEDGEMENTS

A special thanks to all my co-authors

CONTACT INFORMATION

paolocavarzere@yahoo.it