

Moderate, Chronic Hypothyroidism Does Not Lead to More Small-Sized Platelets in the Circulation

Dear Sir,

In a recent article in *Thrombosis and Haemostasis* (1) it was reported that hypothyroidism lead to more small-sized platelets in the circulation. Twelve patients were studied who had been rendered athyreotic as treatment for well-differentiated thyroid carcinoma. The platelet count (PLT), mean platelet volume (MPV) and platelet distribution width (PDW) were assessed

though this may not be clinically apparent. We have shown (7) that hyperthyroid patients exhibit a significantly increased MPV and a significantly decreased PDW as compared to the same patients when euthyroid. Unfortunately, van Doormaal et al. (1) did not report in detail the results of thyroid function tests in their patients. We suggest that the authors were comparing acutely hypothyroid patients with iatrogenic hyperthyroid, not euthyroid, patients.

Table 1 Selected indices of thyroid function and haematology in 9 patients when hypothyroid(H) and euthyroid(E)

Age/Sex	fT ₄		TSH		PLT		MPV		Pct		PDW	
	H	E	H	E	H	E	H	E	H	E	H	E
62/F	5.0	11.0	6.7	3.9	297	262	7.8	7.5	0.232	0.197	16.5	16.6
79/F	5.9	19.7	>50	2.5	255	338	8.0	7.9	0.204	0.267	16.3	17.2
73/F	3.5	15.4	18.9	0.6	164	140	8.1	8.2	0.133	0.115	16.5	16.5
41/M	9.6	21.5	45.0	1.3	428	355	8.6	8.2	0.368	0.293	15.8	15.6
62/F	3.2	—	>50	1.6	305	301	7.8	8.0	0.238	0.241	17.3	16.7
34/F	3.9	24.7	>50	1.3	342	306	7.4	7.9	0.253	0.242	16.4	16.0
34/F	8.5	18.4	12.0	<0.8	237	221	8.0	7.7	0.190	0.170	15.9	16.0
21/F	<2.5	21.4	>50	3.6	225	275	9.2	8.9	0.207	0.245	17.0	16.4
55/F	8.8	19.4	21.9	<0.8	261	342	7.6	7.4	0.198	0.253	16.0	16.0
Mean					279	282	8.1	8.0	0.225	0.225	16.4	16.3
SD					76	68	0.5	0.4	0.064	0.055	0.5	0.5

Abbreviations and reference ranges: fT₄, free thyroxine, 10–23 pmol/l; TSH, thyroid stimulating hormone, 0.5–4 mU/l; PLT, platelet count, 150–400 × 10⁹/l; MPV, mean platelet volume, 6.3–9.5 fl; Pct, platelet haematocrit, 0.187–0.203%; PDW, platelet distribution width, 15.2–17.9%.

during triiodothyronine treatment and 2 weeks after its discontinuation. The authors reported a significant decline in the MPV and significant increases in the PLT and the PDW.

We have studied 9 patients who were referred to the Endocrine Department because of suspected hypothyroidism. The patients were healthy aside from the hypothyroidism which was diagnosed as spontaneous atrophic or attributed to Hashimoto's thyroiditis in 7 cases and followed radioactive iodine treatment for hyperthyroidism in the remaining 2 patients. Blood was withdrawn for analyses when the patients were initially seen and again after they had been euthyroid for at least 4 months on treatment. Replacement doses of thyroxine (0.05–0.15 mg) were administered in all cases. Haematological assays were performed with a Coulter Counter S-Plus IV on blood anticoagulated with disodium EDTA. Statistical analyses were by the paired Student's *t* test; *P* values <0.05 were considered significant.

The results of our investigations are presented in Table 1. There were no significant differences in the mean values for the PLT, MPV, Pct (platelet haematocrit) or PDW between the hypothyroid and euthyroid states.

Our findings do not support those of van Doormaal et al. (1) who claimed that hypothyroidism leads to more small-sized platelets in the circulation. The observations of van Doormaal et al. were made shortly after withdrawal of triiodothyronine and may represent an effect of acute hypothyroidism. We believe, however, that it is more likely that the changes observed were related to a change from mild, subclinical hyperthyroidism to a euthyroid or hypothyroid state. It is accepted by authorities (2, 3) that TSH levels should be suppressed by thyroid hormone administration after thyroidectomy for thyroid carcinoma and there is increasing evidence (4–6) that patients receiving suppressive doses of thyroid hormone are mildly hyperthyroid even

H. C. Ford
J. M. Carter
Department of Pathology
Wellington School of Medicine
P. O. Box 7343
Wellington South, New Zealand

References

- van Doormaal J J, van der Meer J, Oosten H R, Halie M R, Doorenbos H. Hypothyroidism leads to more small-sized platelets in circulation. *Thromb Haemostas* 1987; 58: 964–5.
- Burrow G N. The thyroid-nodules and neoplasia. In: *Endocrinology and Metabolism*. Felig P, Baxter J D, Broadus A E, Frohman L A (eds). McGraw-Hill, New York 1981; pp 351–82.
- Ingbar S H. The thyroid gland. In: *Williams Textbook of Endocrinology*. Wilson J D, Foster D W (eds). 7th ed. W. B. Saunders, Philadelphia 1985; pp 682–815.
- Coindre J M, David J P, Riviere L, Goussot J F, Roger P, de Mascarel A, Meunier P J. Bone loss in hypothyroidism with hormone replacement. *Arch Intern Med* 1986; 146: 48–53.
- Ross D S, Neer R M, Ridgeway E C, Daniels G H. Subclinical hyperthyroidism and reduced bone density as a possible result of prolonged suppression of the pituitary-thyroid axis with L-thyroxine. *Am J Med* 1987; 82: 1167–70.
- Carr D, McLeod D T, Parry G, Thornes H M. Fine adjustment of thyroxine replacement dosage: comparison of the thyrotrophin releasing hormone test using a sensitive thyrotrophin assay with measurement of free thyroid hormones and clinical assessment. *Clin Endocrinol* 1988; 28: 325–33.
- Ford H C, Toomath R J, Carter J M, Delahunt J W, Fagerstrom J N. Mean platelet volume is increased in hyperthyroidism. *Am J Hematol* 1988; 27: 190–3.

Received June 15, 1988 Accepted June 17, 1988