Coagulation inhibitor in hypothyroidism

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Abstract

A patient was referred for investigation of heavy bleeding after surgery. He showed several features of hypothyroidism but no goitre. Primary autoimmune hypothyroidism was confirmed by the finding of a low serum thyroxine concentration and a high thyrotropin concentration. Factor VIII concentration was low, and a mild coagulation inhibitor was found. The patient was treated with thyroxine and returned to normal health within a few months.

The inhibitor found in this patient may have been specific for factor VIII, but the presence of coagulation inhibitors should be considered in patients with hypothyroidism.

Introduction

Hypothyroidism may be associated with defective synthesis of coagulation factors, which becomes normal after thyroid replacement.¹⁻³ We describe a patient who presented with hypothyroidism and a circulating coagulation inhibitor.

Case report

A 41-year-old male instrument-maker was referred in May 1979 for investigation of bleeding for five days after periodontal surgery; the bleeding eventually stopped after suture. Neither the patient nor his family had a history of haemorrhagic disorders, and no drugs had been prescribed. He complained of intolerance to cold but denied weight gain. His facial appearance was typical of that of a patient with hypothyroidism, as were his gruff voice, slow speech, and rough skin, but there was no goitre. The pulse rate was 60/min and regular. The cardiovascular system, respiratory system, and abdomen were normal, as was the central nervous system apart from myotonic tendon reflexes. The diagnosis of primary autoimmune hypothyroidism was confirmed by a low serum thyroxine concentration (4 nmol/l (0.0315 µg/100 ml)) and a high thyrotropin concentration (62 mU/l). Titres for thyroid microsomal and thyroglobulin antibodies were 1/400 and 1/102 400 respectively. The haemoglobin concentration was 9.9 g/dl, with normal red cell indices; the white blood count and differential and platelet count were normal, as were results of platelet aggregation tests, urea and electrolyte concentrations, plasma proteins, findings on protein electrophoresis, and serum vitamin B₁₂ and folate concentrations. The erythrocyte sedimentation rate was 60 mm in the first hour. The aspartate transaminase activity was high (160 IU/l), but results of other liver function tests were normal. Tests for parietal cell antibodies were positive but negative for antinuclear factor. The bleeding time (Simplate) was normal at eight minutes, as was the prothrombin ratio. The partial thromboplastin time with kaolin (PTTK) test was abnormal (52 seconds, control 37), a one-stage factor VIII assay was slightly low (0.34 units/ml), and a factor IX assay was normal (0.62 units/ml). The presence of a mild coagulation factor inhibitor was shown, using the PTTK test on a 50:50 mixture of normal and patient plasma incubated at room temperature (table).⁴

The patient was treated with thyroxine tablets 0.1 mg daily and within a few months returned to normal health, having lost 7 kg

in weight. The haemoglobin concentration, erythrocyte sedimentation rate, aspartate transaminase activity and serum thyroxine concentration became normal, but the inhibitor was still detected in February 1981, 18 months after starting thyroid replacement.

Results of partial thromboplastin time with kaolin (PTTK) test on plasma

Incubation time (hours)	PTTK clotting time (seconds)		
	Patient's and normal plasma	Factor VIII-deficient and normal plasma	Normal plasma and buffer
0	53	51	50
1	54	51	50
2	73	64	63
3	105	80	74

Discussion

The association of hypothyroidism with other autoimmune disorders is well known, but so far as we are aware there are no reports of circulating antibodies (inhibitors) against coagulation factors in hypothyroidism. This is surprising, since inhibitors occur in other autoimmune conditions, such as systemic lupus erythematosus and rheumatoid arthritis. The inhibitor shown in our patient was of weak intensity and probably would not have been discovered without the bleeding complication after surgery.

In view of the low factor VIII concentration detected in the patient's plasma, we think that the inhibitor may be specific for this clotting factor. We were, however, unable to prove this conclusively, and it may be of the non-specific type found in collagen disorders.⁵ Coagulation studies of other patients with hypothyroidism, with particular reference to inhibitors, would be worth while.

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References

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ONE HUNDRED YEARS AGO JAD.—We cannot agree that the standard of examination for naval cadets is fixed at all above the standard of education which any reasonably intelligent lad ought to have reached without effort. There is much more idling than overwork, in our experience, in public schools; and the instances in which either boys or girls have been injured by mental overwork are rare indeed, and for the most part wholly fabulous and fanciful. (*British Medical Journal*, 1881.)