

Pembrolizumab Induced Thyroiditis in patient with Graves' disease

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BACKGROUND

New immune-modulatory therapies for malignancies have transformed their management with significantly enhanced survival outcomes. Pembrolizumab is an antibody against the programmed-death-1 (PD-1) molecule that increases the cytotoxic function of T-cells with excellent tumor response rates. Endocrinopathies including thyroiditis are an increasingly recognized side effect of this medication. We describe a unique case where Thyroiditis occurred as a result of treatment with Pembrolizumab.

CASE STUDY

A 55-yr-old male a known case of eu-thyroid Graves' disease (TSH 1.11 mU/l (NR 0.35-5.5), FT4 11 nmol/L (NR 9-23) on maintained dose of 5 mg of carbimazole for the last 6 months, who was receiving treatment with pembrolizumab for malignant squamous lung cancer develop painless Thyroiditis after 8 weeks of a taking this treatment. He developed symptoms of thyroiditis, which it confirmed in his repeat Thyroid function test (TSH 53.2 mU/l, FT4 4 nmol/L and FT3 3 nmmol/L). Thyroid peroxidase Antibodies were positive >1300 ku/L and TSH Binding site inhibition antibodies is 22.5 U/L.

He was treated with Levothyroxine treatment to control his symptoms and normalised his thyroid function test. He did require a higher dose of thyroxine treatment (250 mcg daily) compared to standard dose replacement of thyroxine which was 1.6 mcg/kg. His thyroid function remains stable on current treatment and Pembrolizumab treatment had been withdrawn following deterioration of lung cancer.

DISCUSSION

Thyroid dysfunction is common in cancer patients treated with pembrolizumab. Reversible destructive thyroiditis and overt hypothyroidism are the most common clinical presentations. The mechanism of thyroid destruction appears independent of thyroid autoantibodies and may include T cell, NK cell, and/or monocyte-mediated pathways. To our knowledge this is the first case report of pembrolizumab induced thyroiditis in GD. Given the short duration onset and rate of development of thyroid dysfunction, regular frequent testing of TFTs should be performed.

REFERENCES

1. **Pardoll DM.** The blockade of immune checkpoints in cancer immunotherapy. *Nat Rev Cancer.* 2012;12:252–264.