

INFLUENZA A INDUCED THYROTOXIC STORM POST HAEMATOPOIETIC STEM CELL TRANSPLANT

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INTRODUCTION

Thyroid storm is a rare occurrence of severe thyrotoxicosis, most commonly associated with Grave's disease and is reported to have a high morbidity and mortality.¹ It is particularly rare in children. Whilst there is a scoring system to diagnose thyroid storm in adults, there is not an equivalent for children.²

Here, we describe the case of a patient who developed thyroid storm secondary to influenza A infection.

CASE REPORT (1)

We examined the case of a thirteen year old patient who had a matched unrelated donor haematopoietic stem cell transplant for immunodeficiency (CTPS1 deficiency).

Six months post-transplant, she developed heat intolerance and palpitations.

On examination, she had a fine tremor but no goitre or exophthalmos. Her temperature was above 38 degrees C for two days, she was tachycardic with HR >140, flushed and had diarrhoea. There was no CNS dysfunction.

Thyroid function tests (Table 1) showed hyperthyroidism.

She was negative for anti-TSH receptor and anti-TPO antibodies. Thyroid ultrasound demonstrated increased vascularity and heterogenous echogenicity.

Neutrophil count was $0.54 \times 10^9/L$ secondary to bone marrow transplant. She was found to be Influenza A virus positive at the time that she was symptomatic with thyroid storm.

CASE REPORT (2)

As agranulocytosis is a possibility with carbimazole, it would be difficult to add this risk to her pre-existing post-transplant neutropenia.

We therefore managed her with Lugols iodine and intravenous hydrocortisone.

Her thyroid function began to normalise within three days and T4 level was reduced to 29pmol/L one week after starting treatment (Table 1).

She then developed hypothyroidism despite withdrawal of Lugol's iodine and 2 months after the initial thyrotoxic phase was started on Levothyroxine.

Twenty months later, she currently takes 125 micrograms daily levothyroxine and is asymptomatic.

	TSH (mu/L) (0.2 - 5 mu/L)	T4 (pmol/L) (9 - 24 pmol.L)	fT3 (pmol/L) (3.5 - 6.7 pmol/L)	Management
At diagnosis	< 0.01	> 100	17.0	Lugols iodine 0.3ml TDS, hydrocortisone 100mg IV
One week after commencing Lugols iodine	< 0.01	29.0		Lugols iodine 0.3 ml TDS, HCT changed to prednisolone 40mg
Two weeks after commencing Lugols iodine	2.9	6.1	1.9	Lugols iodine reduced to 0.1ml TDS, prednisolone 10mg
Two months after commencing Lugols iodine	12.1	13.3		Lugols iodine stopped, prednisolone converted to physiological hydrocortisone
Two weeks after stopping Lugols iodine	14.6	16.5		Commenced levothyroxine 25 mcg OD
Twenty months from diagnosis	1.9	20.1		Levothyroxine 125 mcg OD continued

Table 1: Thyroid function tests from diagnosis and corresponding management

This 13 year old patient developed thyrotoxicosis secondary to influenza infection.

The clinical picture was of an acute thyroiditis eventually evolving into hypothyroidism.

One previous case reports a young adult patient developing thyrotoxicosis secondary to H1N1 infection.³

However, there are no previous reported cases of thyrotoxicosis in children secondary to influenza A infection.

There are no reports of stem cell transplant resulting in hyperthyroid storm.

CONCLUSIONS

Influenza A may be a rare cause of thyroid dysfunction with an initial thyroid storm evolving later into hypothyroidism.

Although thyroid auto-immune dysregulation has been reported after haematopoietic stem cell transplantation, thyroid storm has not.¹ In this population of patients there should be a low threshold for checking thyroid function tests in patients presenting with pyrexia even in the presence of an infection (in this case influenza A).

REFERENCES

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