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. 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. 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 diaphoresis. 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 x 10^9/L secondary to bone marrow transplant. She was found to be asymptomatic with thyroid storm.

Thyroid storm has not been reported in children receiving stem cell transplant neutropenia. There are no previous reported cases of thyroid storm in children secondary to influenza A infection.

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. 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


ACKNOWLEDGEMENTS

Thank you to our patient and their parents who kindly consented to us writing up this case report.

CONTACT INFORMATION

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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 Lugol’s 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.

Table 1: Thyroid function tests from diagnosis and corresponding management

<table>
<thead>
<tr>
<th>Management</th>
<th>TSH (mu/L)</th>
<th>T4 (pmol/L)</th>
<th>fT3 (pmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At diagnosis</td>
<td>&lt; 0.01</td>
<td>&gt; 100</td>
<td>17.0</td>
</tr>
<tr>
<td>One week after commencing Lugol’s iodine</td>
<td>&lt; 0.01</td>
<td>29.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Two weeks after commencing Lugol’s iodine</td>
<td>2.9</td>
<td>6.1</td>
<td></td>
</tr>
<tr>
<td>Two months after commencing Lugol’s iodine</td>
<td>12.1</td>
<td>13.3</td>
<td></td>
</tr>
<tr>
<td>Two weeks after stopping Lugol’s iodine</td>
<td>14.6</td>
<td>16.5</td>
<td></td>
</tr>
<tr>
<td>Twenty months from diagnosis</td>
<td>1.9</td>
<td>20.1</td>
<td></td>
</tr>
</tbody>
</table>

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. 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.