A rare neoplasm of the thyroid gland

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Abstract

Burkitt’s lymphoma of the thyroid gland is a rare malignancy. We present a case of a 58-year-old female who developed a rapid enlargement of her thyroid gland. Core biopsy confirmed the diagnosis of Burkitt’s lymphoma. The tumour resolved after three cycles of chemotherapy. This case report emphasises the importance of considering lymphoma when dealing with thyroid nodules and goitres, as its management is different from that of other thyroid pathologies and delaying treatment has an impact on prognosis.

Primary thyroid lymphoma is a rare neoplasm, accounting for 1–5% of all thyroid malignancies. Diffuse large B-cell lymphoma is the most common histological subtype, occurring in up to 70% of all thyroid lymphomas. This is followed by extranodal marginal zone lymphoma of mucosa associated lymphoid tissue. Burkitt’s lymphoma is a less common histologic subtype, constituting 4% of all primary thyroid lymphomas. It is highly aggressive and is the fastest growing tumour. It can grow rapidly and lead to airway compromise and tumour lysis syndrome.

Case report

We report a case of Burkitt’s lymphoma of the thyroid gland. A 58-year-old woman with a background of benign goitre presented with a rapidly enlarging thyroid mass for 2 months that was causing dysphagia and dyspnoea. She denied weight loss, fever and night sweats. Physical examination revealed a multinodular goitre. She did not have any lymphadenopathy, hepatosplenomegaly or abdominal masses.

Initial laboratory parameters are shown in Table 1. Ultrasound showed significant enlargement of the thyroid gland with multiple nodules in both lobes and the isthmus. Neck computed tomography (CT) scan demonstrated a left thyroid mass measuring 7×5×8 cm (Figure 1). Monotonous lymphoid cells suspicious for lymphoma were seen on fine needle aspiration (FNA).

The diagnosis of non-endemic Burkitt’s lymphoma was confirmed with core biopsy and a positive MYC gene rearrangement in 100% of the cells examined. MYC is a transcriptional regulator that has an essential role in cell cycle control. Translocations involving the MYC gene lead to its overexpression and this is a defining feature of Burkitt’s lymphoma. Further workup which included a bone marrow biopsy, cerebrospinal fluid analysis and staging CT scan of the chest, abdomen and pelvis did not reveal involvement of other organs.

She was treated according to the modified Magrath protocol for Burkitt’s lymphoma, low risk disease, which involved having 3 cycles of R-CODOX-M (rituximab, cyclophosphamide, vincristine, doxorubicin, high-dose methotrexate).
A repeat CT scan 4 weeks after completion of treatment has shown complete resolution of the tumour mass (Figure 2).

Table 1. Abnormal laboratory parameters

<table>
<thead>
<tr>
<th>Variable (units)</th>
<th>Result</th>
<th>Reference range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antithyroglobulin antibodies (IU/mL)</td>
<td>249.3</td>
<td>0–4</td>
</tr>
<tr>
<td>LDH (after core biopsy) (U/L)</td>
<td>445</td>
<td>170–430</td>
</tr>
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<td>Epstein Barr Virus nuclear antigen</td>
<td>Positive</td>
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</tbody>
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LDH – lactate dehydrogenase.

Figure 1. Neck CT showing the left thyroid mass displacing the trachea (arrowed)

Figure 2. Neck CT showing resolution of left thyroid mass
Diagnosis and staging of Burkitt’s lymphoma are urgent because treatment needs to be started promptly. There is a high risk of tumour lysis syndrome and prophylaxis should be started once the diagnosis is confirmed. Core biopsy is the advised modality for tissue diagnosis as FNA does not provide enough material for histopathology and immunohistochemistry. Staging must include CT scans of the chest, abdomen and pelvis. It is also essential to examine the bone marrow and cerebrospinal fluid for involvement.

In contrast to differentiated thyroid cancer where the mainstay of treatment is surgery, the current approach for lymphoma of the thyroid is to treat in the same manner as lymphoma involving other organs. The primary modality of treatment of lymphoma in the modern era is combination chemotherapy.

As Burkitt’s lymphoma is a rapidly proliferating tumour, treatment requires rapidly cycling and intensive chemotherapy. One of the regimens used is the modified Magrath protocol in which patients are stratified into low and high risk groups, depending on the tumour site and extent, level of LDH and performance status. Low risk patients receive 3 cycles of CODOX-M (cyclophosphamide, vincristine, doxorubicin, high-dose methotrexate) and high risk patients are treated with 2 alternating cycles of CODOX-M and IVAC (ifosfamide, cytarabine, etoposide, intrathecal methotrexate). Rituximab (monoclonal chimeric antiCD20 antibody) is also added to this regimen.

This case report emphasises the importance of considering lymphoma when dealing with thyroid nodules and goitres, as its management is different from that of other thyroid pathologies and delaying treatment has an impact on prognosis.

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