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Case Report
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A Case Report on Isolated Neck Lymphadenopathy in Pediatric Age Group as A Papillary Thyroid Carcinoma

Pankaj Goyal[1]*, Kishan Kumawat[1] and Nirupama Kothari[2]

[1]*Apollo ENT Hospital, India*

[2]*Sterling Accouris Diagnostics, Jodhpur, Rajasthan, India*

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***Corresponding author:** Pankaj Goyal, Apollo ENT Hospital, India Email: **pank1414@gmail.com**

Abstract

Less than 5% of thyroid malignancies are in children, making pediatric thyroid cancer a rare disease. Advanced presentation, numerous lymph nodal metastases, and frequent pulmonary metastases all define this fascinating disease. Because of its exceptional ability to survive despite its aggression, it may have a unique biology and behavior. This necessitates careful, well-executed therapy choices. Only a few Indian research have examined pediatric thyroid malignancies. Early diagnosis is therefore essential for selecting a treatment. From a treatment perspective, surgery is almost always a superior option. We present a case report of a twelve-year-old female patient with isolated right-side neck lymphadenopathy who was diagnosed with papillary thyroid carcinoma, treated well with total thyroidectomy with right sided selective neck dissection and central compartment clearance. After that radioiodine ablation therapy was taken.

Keywords: Pediatric; Thyroid Cancer; Lymph Nodes; Surgical Excision; Radioiodine Ablation (CT) Computed Tomography; (FNAC) Fine-Needle Aspiration Cytology; (PT) Papillary Thyroid Cancer

Introduction

Paediatric thyroid cancer is an uncommon disease that accounts for less than 5% of all thyroid cancers. The most prevalent type of paediatric thyroid cancer, accounting for 85-95% of cases, is papillary thyroid carcinoma. Typically, these tumours are discovered at varied phases of the disease's course as neck lumps with no obvious symptoms [1]. The prime years are 7 to 12 years old. Infant thyroid carcinoma is incredibly uncommon [2].

Thyroid cancer in children and adolescents from India has only been the subject of a small number of research, but the results have been consistent with the international literature. Compared to adult thyroid cancer, pediatric thyroid cancer frequently recurs and tends to be more advanced at the time of diagnosis. It is unknown, though, whether there are differences between children and adolescents in terms of the pathology at diagnosis and long-term results [3,4].

Moreover, despite having advanced clinical presentations, juvenile patients had a better prognosis and much lower fatality rates than adult patients [5-8]. These results imply that, even at a similar stage at the time of diagnosis, the long-term prognosis and outcome may vary between juvenile and adult patients. There are no age-optimized clinical practice guidelines for the treatment and follow-up of thyroid cancer in pediatric patients due to the lack of knowledge regarding the prognostic implications of the pathology according to age at diagnosis [4,9,10]. Adult thyroid cancer's clinicopathological features and prognoses were recently published [10-14].

The growth in adult thyroid cancer has been attributed to the adoption of early cancer detection cancer screening techniques [10,15]. However, as children and teenagers typically do not get such testing, genetic or environmental variables have been proposed as potential reasons for the rise in pediatric thyroid cancer incidence [16]. This case report depicts neck lymphadenopathy presented as papillary thyroid carcinoma, treated well with surgically and post op radioiodine ablation therapy in a twelve-year-old female patient [17-19].

Case Report

A twelve-year-old female patient reported right-sided neck swelling for ten days. She came to our Apollo E.N.T. hospital to get

this done. She had a ten day history of right-sided painless swelling over neck at that time. She had no prior history of swelling that appeared suddenly. She denied any trauma or tuberculosis history. There had been no previous history of fever, myalgia, decreased appetite, or weight loss. There was no history of thyroid cancer in the family, nor was there any history of irradiation. Her menstrual cycle was regular. She exhibited no signs of hyperthyroidism or hypothyroidism. Her general examination revealed nothing abnormal. On local examination, there was a 3 x 1 cm non-tender swelling at the anterior aspect of the sternocleidomastoid muscle at levels II and III lymph node (Figure 1). There was no midline neck swelling. A computed tomography (CT) scan and a fine-needle aspiration cytology (FNAC) were recommended for the patient. CT scan suggestive of right sided 3.8 x 2.6cm level II lymphnode showing echogenic foci with loss of fatty hilum and microcalcification. FNAC from the right lymph node is suggestive of thyroid papillary carcinoma metastasis. It was staged as cT2N1bM0. Papillary carcinoma of the thyroid gland metastases was visible on USG-guided FNAC from the neck node. The serum T3, T4, and TSH levels were normal. Hematological profile, liver / renal function tests, and chest X-ray results were all within normal ranges. The patient was scheduled for surgery after being determined to be fit for general anaesthesia and receiving the necessary consent. Right-sided selective neck dissection (level II to V) and central compartment clearance were also performed in addition to a total thyroidectomy. The removal of the 4 × 2cm lymph node at level II while protecting the spinal accessory nerve was done carefully. Dissection plane between internal carotid artery and trachea along recurrent laryngeal nerve is needed for central compartment clearance. Nodal hypertrophy measuring 3 × 2cm was observed at level VI (prelaryngeal lymph node). Sending for histopatholgical analysis all surgical specimens, including a total thyroidectomy with right sided neck nodes and a central compartment node. Both the parathyroid glands and the recurrent laryngeal nerve were still present. Although there was neck lymphadenopathy, the surgical plane was well-preserved, which was the most significant intraoperative finding. The surgical wound was stitched up in layers after attaining satisfactory hemostasis, and the suction drain was left in place. After extubation, the patient was sent to the recovery area. The voice of the post-op patient was typical. After 48 hours following surgery, the patient experienced perioral numbness as a symptom of hypocalcemia, which was successfully managed with oral calcium supplementation. Patient was discharged after day five. A month was spent keeping her off iodine. It was classified by histopathology as a papillary thyroid carcinoma with neck node metastases. After the surgery, which lasted 4 weeks, a radioiodine scan was performed, and a 150mci dose of radioiodine ablation therapy was administered. Patient responded favourably to the surgery. She began taking daily calcium and a thyroid supplement. During follow-up, her levels thyroglobulin, calcium, and TSH were all under good control. Her periods flow normally and are regular (Figures 2-4).

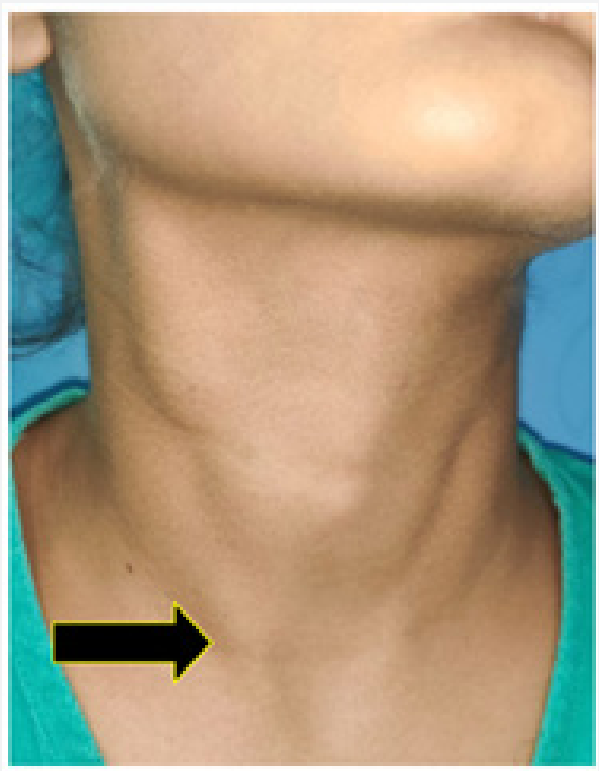

Figure 1: Clinical picture showing right side neck lymphadenopathy at level II and III without obvious thyroid swelling.

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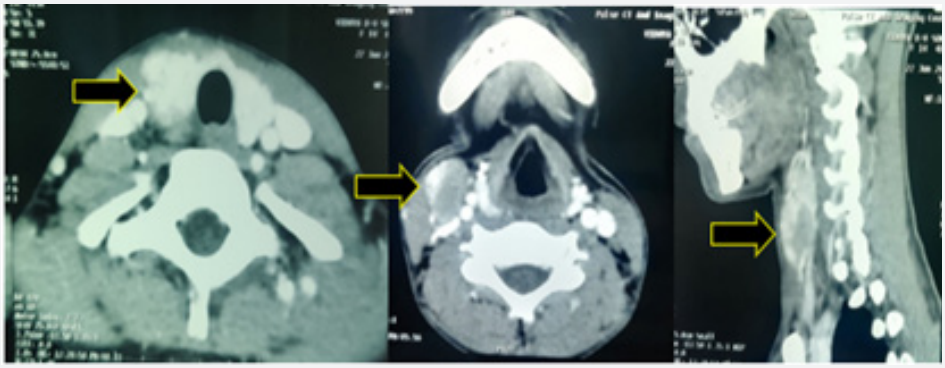

Figure 2: CT scan (axial and sagittal view) showing right side level II lymph node enlargement with microcalcification and loss of fatty hilum.

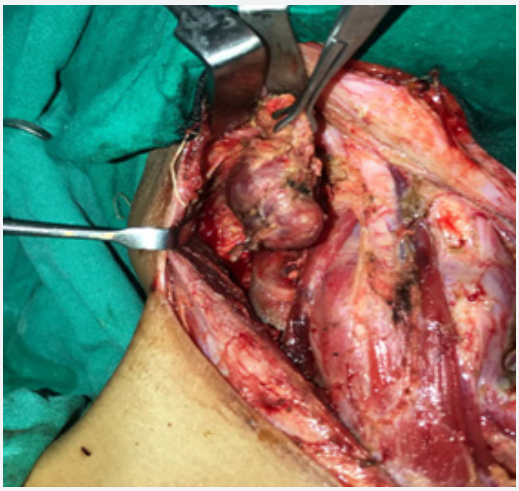

Figure 3: Intra-operative picture showing neck node at level II and III.

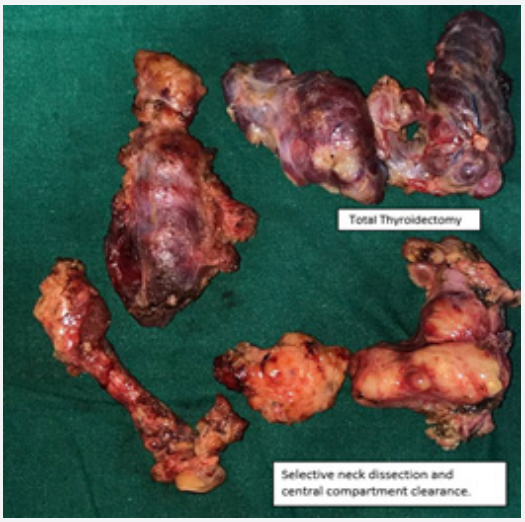

Figure 4: Surgical specimen showing total thyroidectomy with right functional neck dissection and central compartment clearance.

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Discussion

Pediatric age groups have a 1.5% incidence of thyroid carcinoma. Girls account for nearly two-thirds of cases, and the peak age of presentation is between 7 to 12 years. Thyroid cancer in children is uncommon. Radiation exposure in the past and family history are risk factors. Yet, there were no clear risk indicators for the patient who was seen [20]. According to the SEER database, from 1975 to 1995, sporadic papillary thyroid cancer accounted for just 1.4% of all newly diagnosed pediatric carcinomas in the USA.

It's interesting to note that the incidence of each gender varies with age, with males experiencing a 6:1 increase in incidence between the ages of 5 and 9, a similar incidence between males and females between the ages of 10 and 14, and a ratio that is more in line with adult patients after the age of 14 - a ratio of 5:2 females to males [21]. In adults and children, papillary thyroid cancer (PTC) manifests itself as a distinct clinical illness. The long-term outlook for children with locally advanced disease, lymph node involvement, and distant metastases is better than it is for adults. The preferred course of treatment for PTC in children is optimum surgery [21]. Children with PTC can be expected to have normal lives [22].

After surgical resection, papillary or papillary-follicular histology has been demonstrated to be a significant risk factor for recurrence. Children experience recurrence at a rate of 35-45% against 5-20% in adults [23]. However, in our case there was no recurrence, over a follow up period of one year [22]. Young children with differentiated thyroid carcinomas have more aggressive clinical behavior, with a reported rate of lymph node metastases between 60 and 80% and lung metastases in about 20% of cases at diagnosis. The best example of this is a report from the cancer center in New York, where it was found that 83 out of 327 patients with differentiated thyroid cancer who were under 21 years old had distant metastasis; 90% of this group had regional nodal metastasis, 48% had extrathyroidal extension, and all had distant metastasis to the lung at presentation. The survival rate in their series was 100% after 10 years [22]. despite the severe clinical characteristics of differentiated thyroid cancer. Our patient's neck dissection specimen revealed multifocal papillary carcinoma metastases, although her chest X-ray was unremarkable. Younger age (<16 years), involvement of local lymph nodes or distant metastases at diagnosis, and some histological traits, such as the diffuse-sclerosing papillary variation, which is frequently observed in youngsters, are risk factors for recurrence [24].

The most frequent genetic change in papillary thyroid cancer is somatic rearrangement-mediated activation of the RET protooncogene. RET/PTC and RET/PTC3, which result from a paracentric inversion of the long arm of chromosome 10, and RET/PTC2, which results from a 10;17 translocation, are the three primary rearranged variants of RET that have been reported [25]. A combination of ultrasound, CT scan without contrast, and fine needle aspiration cytology is frequently used to make a diagnosis [26].

Several studies have suggested total or nearly total thyroidectomy as the treatment of choice for papillary thyroid cancer in children; the presence of multicentric tumor incidence and involvement of both bilateral lobes is a reason for total thyroidectomy. The significance and extent of neck dissection is the other concern in the treatment of children with thyroid cancer. Although neck dissection is recommended for patients with palpable metastatic neck nodes, there is little evidence to support its use as a prophylactic measure when there is no initial palpable or radiological illness [22]. Clearance of the ipsilateral levels II–V lymph nodes along with pre- and paratracheal lymph node clearance is part of the standard curative regional neck dissection [27].

In our patient, we performed total thyroidectomy along with ipsilateral functional neck dissection (level II–V) and central compartment clearance. After surgery, the voice returned to normal, and there was just one incidence of hypocalcemia throughout the recovery period (second day). It has been advised, especially in younger patients under the age of 16, to do radioiodine ablation using 30-150 mica of I-131 four weeks after surgery to eliminate any remaining functioning thyroid tissue. Patients need to be followed up with on a frequent basis, and their thyroglobulin levels are checked. If necessary, a diagnostic I-131 whole body scan is also carried out annually.

Prior to surgery in this case, the serum thyroglobulin level was originally high. On a recent follow-up, its levels were close to normal values. A postoperative I-131 uptake scan did not show any significant uptake in the neck or chest. Nonetheless, a dose of 100 mica radioiodine was given due to the substantial lymph node involvement. The kid takes 150 mg/day of thyroxine replacement [28].

Conclusion

In comparison to adult patients, pediatric papillary thyroid cancer patients might present with a very aggressive first presentation that includes a high rate of local lymph node metastases and a moderately high proportion of distant metastases. The fatality rates are still modest even though the lifetime recurrence rate is substantial. Children with palpable thyroid anomalies should be investigated for probable malignancy.

Compliance with Ethical Standards

The procedure performed in this case report was in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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