

## Chemotherapy effect on neglected thyroid carcinoma metastatic to axilla – A case report

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### ABSTRACT

Thyroid cancer is a thyroid gland malignancy with an increasing incidence, especially in women aged 25–65 years. The tumor, node, and metastases classification serves to determine cancer management. Here, we report the case of 58 years old who came with complaints of lumps in the neck and the left armpit for 2 months. Based on the results of the systemic history, physical examination, and supporting examinations including X-rays, ultrasound, magnetic resonance imaging, and biopsy, a final diagnosis of T4bN1bM1 thyroid papillary cancer (lung) with a left axillary mass, which is cancer thyroid metastases, was given. The management carried out in these patients was chemotherapy with chemotherapy regimens doxorubicin (20 mg/m<sup>2</sup>) iv and paclitaxel (60 mg/m<sup>2</sup>) iv once per week, respectively, but unfortunately, the patient died due to respiratory failure. This case report tries to elaborate the chemotherapy effects on neglected thyroid carcinoma metastatic to the axilla so that the clinicians have representation about these effects.

**Key words:** Axilla, Chemotherapy, Metastasis, Tumor

Thyroid cancer is the malignancy of the thyroid gland. The incidence of malignancy is higher among women than men and usually appears in the age range of 25–65 years. This malignancy has steadily increased over the last decade with a diagnosis of 52,890 new cases and 2180 deaths in the United States in 2020 [1]. Thyroid cancer usually appears as nodules in the thyroid area and a palpable mass on palpation. Histologically, thyroid cancer is divided into four types, namely, papillary, follicular, medullary, and anaplastic. To support the diagnosis of thyroid cancer, a complete systemic history is needed, as well as physical examination, and supportive support. Surgery is the standard of management for this cancer, but in several circumstances, cancer cannot be operated on due to its advanced stage, metastasis, or the tumor is too extensive to invade surrounding tissue where it is not possible to extract it [2-4]. We report a case in our institution to elaborate chemotherapy effects on neglected thyroid carcinoma metastatic to the axilla so clinicians have representation about these effects.


### CASE REPORT

A 58-year-old female presented with complaints of lumps in the neck and the left armpit for 2 months. The patient also complained

of shortness of breath during activities accompanied by coughing and hoarseness. Neck lumps appeared on both sides (right and left) which were felt to be getting bigger for the past 4 years. Because of that, the patient went to Darsono Hospital at Kebumen and perform some laboratory test, with the result of thyroid-stimulating hormone (TSH) 7.0 (0.3–5 u/ml) and free thyroxine (FT) 4 2.50 (0.93–1.71 ng/dl) then received propylthiouracil therapy but there was no change. History of chronic disease was denied. A history of similar complaints in the family was not present.

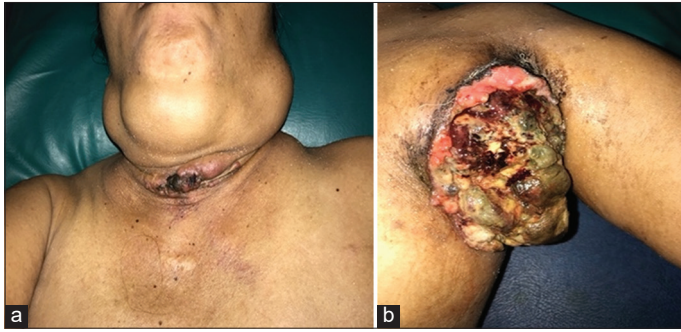
On physical examination, the patient was fully alert (GCS E4V5M6), with a blood pressure of 130/80 mmHg, axilla temperature of 36.7°C, a pulse rate of 98×/min, a respiratory rate of 22×/min, and oxygen saturation of 98%. At present, the lump was of a tennis ball size (7 cm × 6 cm) with a dense consistency, same skin color as its surroundings, warm touch, fixed, and moving along when swallowing. While 4 months earlier, the lump size was only a chicken egg (2 cm × 3 cm). The second lump was in the left armpit, which was getting bigger for the previous 2 months, with 2 cm × 3 cm in size, solid, reddish in color, and fixed (Fig. 1). About 2 weeks earlier, the lump burst and caused sores with blood, fluid, pus, and foul-smelling.

The complete blood count examination revealed hemoglobin 11.1 g/dl, hematocrit 36%, leucocyte 16.8 × 10<sup>3</sup>/uL, thrombocyte 436 × 10<sup>3</sup>/uL, erythrocyte 4.47 × 10<sup>6</sup>/uL, blood glucose

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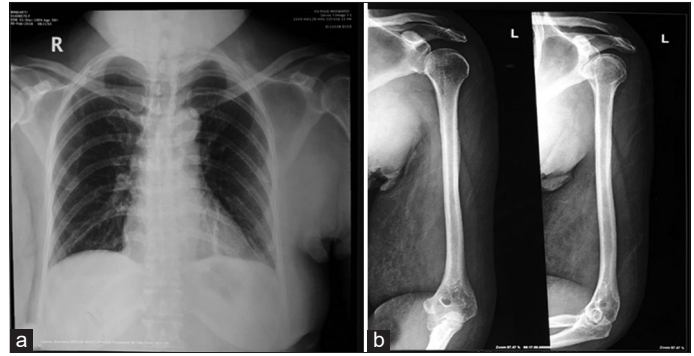
**Figure 1:** Clinical presentation of the lump showing lump on the (a) neck and (b) the left axilla

156 mg/dL, aspartate aminotransferase 13 U/L, alanine transaminase 10 U/L, creatinine 0.6 mg/dL, non-reactive HbsAg, TSH 0.10 uIU/ml (0.50–8.90), and FT4 17.28 pmol/l (10.30–34.70). When viewed from an existing lump, a provisional diagnosis includes Hashimoto’s thyroiditis and thyroid lymphoma or other benign thyroid nodules (nodular goiter, thyroid cyst, and follicular adenoma). To establish the diagnosis, several supporting examinations were carried out. A neck biopsy revealed thyroid papillary cancer of the thyroid.

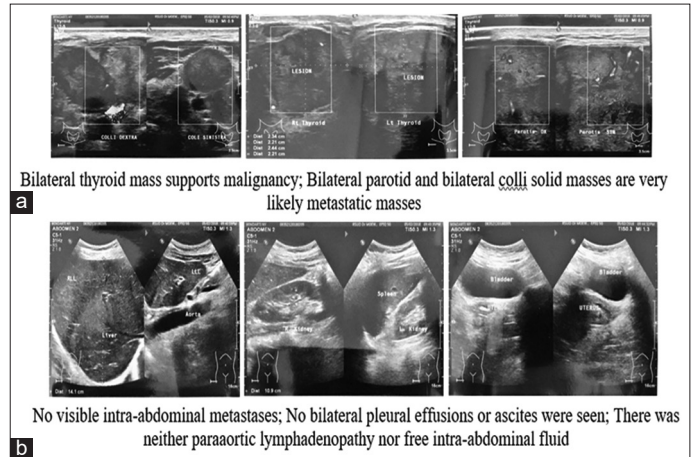
The chest X-ray showed pneumonia (Fig. 2a). Meanwhile, the left upper arm X-ray showed soft-tissue mass (Fig. 2b). Ultrasound (USG) examinations were performed on the thyroid and abdomen to assess lesions and tumor metastases. Thyroid USG showed an impression of a bilateral thyroid mass supporting the malignancy as well as a solid mass in the bilateral parotid and bilateral coli where a metastatic mass is likely (Fig. 3a). Abdominal USG showed no metastases (Fig. 3b). Magnetic resonance imaging (MRI) examination, performed to determine further metastases of the tumor, showed a bilateral malignant thyroid mass with expansion of the infra-auricular, colli, submandibular, supraclavicular, and bilateral infraclavicular, infiltrating the bilateral sternocleidomastoid, sternohyoid, sternothyroid, spinalis cervicis, and multifundus muscles. The mass narrows the airway as high as VC 6-7, Vth 8. There was no visible intracerebral expansion of the mass and no metastasis to the cervical spine corpus (Fig. 4a). A biopsy was performed on the neck and the left axilla. The results of the left axilla biopsy showed metastases of the papillary carcinoma of the thyroid gland (Fig. 4b).

Based on the results of the systemic history, physical examination, and supporting examinations including X-rays, USG, MRI, and biopsy, a final diagnosis of T4bN1bM1 thyroid papillary cancer (lung) with a left axillary mass, which is cancer thyroid metastases, was given. The management carried out in these patients was chemotherapy with chemotherapy regimens doxorubicin (20 mg/m<sup>2</sup>) IV and paclitaxel (60 mg/m<sup>2</sup>) IV once per week, respectively. Chemotherapy was done in six series in total for every 21 days.

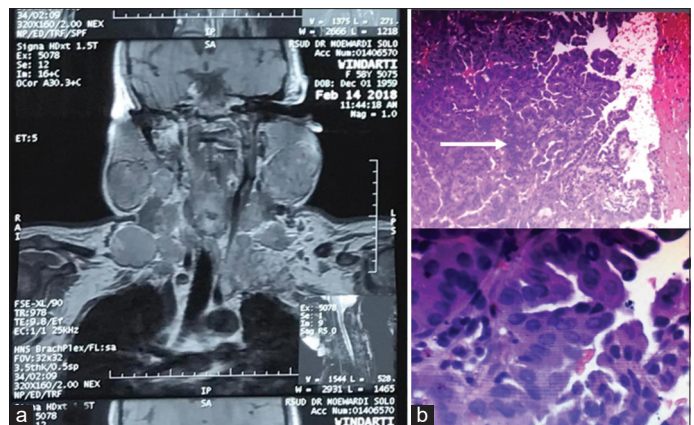
Cervical computed tomography scans with contrast after 5-series doxorubicin and paclitaxel chemotherapy showed non-enhanced soft-tissue mass in the lower neck area, with right-left infrahyoid muscle thickening, and para-retrofarary area



**Figure 2:** (a) Chest X-ray showed pneumonia and the (b) left upper arm X-ray of the patient showed soft-tissue mass



**Figure 3:** Ultrasound imaging. (a) Thyroid ultrasound; (b) abdominal ultrasound



**Figure 4:** (a) Magnetic resonance imaging; (b) biopsy thyroid lumps (white arrows, papillary cells)

suppressing the trachea and esophagus to the left and anterior. The patient died on March 2021, due to respiratory failure.

**DISCUSSION**

Thyroid papillary cancer is a type of thyroid cancer that occurs most frequently. The pathophysiology of thyroid carcinoma metastasizing to the axilla is still difficult to understand. Current hypotheses explaining the spread of tumors from hollow cervical nodes to basins of axillary lymph nodes include direct

communication between the cervical and axillary lymphatic systems, hematogenous spread, or retrograde spread to regional lymphatic channels [4]. Remote metastases in thyroid cancer have a high incidence. The most common distant metastases are lung and liver [5-7]. The narrowed airways in MRI examination cause the patient to experience shortness of breath and hoarseness. This imaging showed no intracerebral and cervical corpus vertebrae metastases. It can be concluded that the tumor, node, and metastases (TNM) classification is T4bN1bM1 (lung) with Stage IVC [2,4,8].

The management of thyroid cancer depends on the cancer types and stages. Surgery, as the common management, is done to remove the primary tumors and minimize morbidity. For cancers that cannot be operated on, other management can be done, such as radioactive iodine therapy, thyroid suppression therapy, external beam radiation therapy, targeted drugs, and chemotherapy. In this patient, chemotherapy was performed using the doxorubicin and paclitaxel regimens. According to the British Thyroid Association, palliative chemotherapy may play a role in end-stage disease that is not controlled surgically. There is no radioiodine therapy or external beam radiotherapy at our institution, so chemotherapy is preferred. The regimen used is in accordance with the regimen recommended by the American Thyroid Association (ATA), namely, doxorubicin and paclitaxel. The combination of these two regimens has been used for a wide variety of tumors and has been shown to have a better effect when used monotherapy [3,9-12]. The regimen used is in accordance with the regimen recommended by the ATA, namely, doxorubicin and paclitaxel. The combination of these two regimens has been used for a wide variety of tumors and has been shown to have a better effect when used monotherapy [3,9-12]. The regimen used is in accordance with the regimen recommended by the ATA, namely, doxorubicin and paclitaxel. The combination of these two regimens has been used for a wide variety of tumors and has been shown to have a better effect when used monotherapy [3,9-12].

In patients with thyroid cancer who have undergone metastases such as these patients, the main therapy of choice should be radioiodine therapy. However, given the limited facilities and infrastructure available, the treatment chosen for this patient was palliative chemotherapy using the doxorubicin and paclitaxel regimens. In this patient, there was an improvement in the condition of the tumor as seen from the size of the tumor that reduced  $\pm 25\%$  with the wound surface drying.

## CONCLUSION

Thyroid cancer is a malignancy of the thyroid gland with an increasing incidence, especially in women aged 25–65 years.

Thyroid cancer classification using TNM serves to classify cancers based on stage and to take the right management. The main management of this cancer is surgery but for advanced cancer, radioiodine therapy or external beam radiotherapy is performed. If the two chemotherapy therapies cannot control cancer, then chemotherapy is performed. Chemotherapy is the last therapy which is palliative therapy for advanced cancer. The combination of doxorubicin and paclitaxel is often used in the treatment of cancer and has been shown to have a better effect when used as monotherapy.

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