Neoadjuvant tyrosine kinase inhibitor (Lenvatinib) for locally advanced papillary thyroid carcinoma: Early experience from a university hospital in Malaysia

Muhammad Safwan Abdullah, Mohd Helmi Mohd Samathani, Shahrun Niza Abdullah Suhaimi

Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000, Kuala Lumpur, Malaysia

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ABSTRACT

Introduction: Locally advanced papillary thyroid carcinoma (LAD PTC) with aerodigestive invasion poses significant surgical challenges. Invasive procedures often carry high morbidity, and complete resection may not be feasible at diagnosis. Tyrosine kinase inhibitors (TKIs), such as Lenvatinib, have shown efficacy in radioiodine-refractory thyroid cancer, but their role in the neoadjuvant setting remains underexplored, particularly in resource-limited environments. **Materials and Methods:** We present a case series of three female patients (ages 54–67) with biopsy- and imaging-proven LAD PTC (T4bN1bM0) treated with neoadjuvant Lenvatinib at Hospital Canselor Tuanku Muhriz, Universiti Kebangsaan Malaysia. All patients were discussed in a multidisciplinary team (MDT) meeting involving endocrine surgery, otolaryngology, oncology, and radiology. Each patient demonstrated extensive local invasion involving the trachea or oesophagus, with encasement of neck vessels. Lenvatinib was initiated as neoadjuvant therapy due to high surgical risk at presentation. **Results:** All three patients demonstrated partial tumour response on imaging after 3–6 months of TKI therapy, with improvement in obstructive symptoms. One patient was able to remove her percutaneous endoscopic gastrostomy (PEG) tube and resume oral intake. One patient's airway symptoms fully resolved. However, financial limitations prevented another patient from continuing TKI therapy, leading to tumour regrowth. Side effects such as diarrhoea, hypertension, SIADH, and hand–foot syndrome were observed but were manageable with supportive care. To date, none of the patients have undergone definitive surgery; one declined resection due to the extent of surgery required, and another awaits reassessment following extended TKI therapy. **Conclusion:** Our early experience suggests that Lenvatinib offers meaningful clinical and radiological responses in LAD PTC, potentially downstaging tumours to a resectable status. In resource-constrained settings, the high cost of TKI remains a major barrier. Larger prospective studies and funding support mechanisms are needed to define and enable the neoadjuvant role of TKI in advanced thyroid cancer.

Keywords: Papillary thyroid carcinoma, neoadjuvant therapy, tyrosine kinase inhibitors