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Original Article

Multidisciplinary treatments in advanced thyroid malignancies: a report of 25 patients

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Abstract: Objective: To describe our first experience of treating patients with advanced thyroid cancers by multidisciplinary treatment (MDT). Methods: Twenty-five consecutive patients who had undergone MDT were enrolled. Detailed information including age, sex, disease stage and treatment procedures was collected and analyzed. Results: Papillary thyroid carcinoma was the most common pathologic subtype (84%), followed by medullary thyroid carcinoma (8%) and follicular thyroid carcinoma (8%). 18 (72%) tumors were staged as T4, 5 (20%) as T3, and 2 (8%) as T2. All except two had a positive neck node disease, and the two patients had bone metastasis, one had tibial metastasis, the other had scapula metastasis. Sternotomy was required in 14 (56%) patients. Excision of bone tumor was implemented within 3 weeks after the complete of thyroid surgery. Transient hypoparathyroidism occurred in 9 (36%) patients, there was no permanent hypoparathyroidism. 7 (28%) patients had permanent injury of recurrent laryngeal nerve. Conclusions: Node stage plays a key role in deciding whether MDT is planned, and MDT is reliable in treating patients with advanced thyroid cancers with low permanent complication.

Keywords: Multidisciplinary treatment, sternotomy, postoperative complication, distant metastasis

Introduction

Head and neck anatomically consists of lip, oral cavity, maxillary sinus, pharynx, salivary gland, throat and thyroid gland. Owing to the quite complexity of head neck cancer, multidisciplinary treatments (MDTs) were widely accepted in major centers [1-5]. Squamous cell carcinoma is the most common histologic type in head neck cancers, previous pioneers have reported significant changes of diagnosis, disease stage and treatment plan as well as considerable survival benefit following group consultation [1-5].

Due to rapid increase of thyroid cancers, thyroid surgery is accounting for 40% of the workload on the head and neck service [6], in which treatments of some advanced thyroid cancers are a great challenge for head and neck surgeons. Unfortunately, limited literature has discussed the role of MDT played in the therapy of advanced thyroid malignancies [7, 8]. Therefore, the current study focused on how MDT benefits patients with advanced thyroid cancers.

Materials and methods

The Zhengzhou University institutional research committee approved our study and all participants signed an informed consent agreement.

Twenty-five consecutive patients with advanced thyroid cancers received MDT from July 2013 to April 2016, information of patients and disease characteristics (according to UICC 2010 classification) was completely collected. Parathyroid hormone (PTH) level was evaluated before operation and one day, one week, three months after surgery, respectively. If postoperative PTH level returned to normal in three months, hypoparathyroidism was considered to be transient, or it was permanent. If postoperative pronunciation could be the same as that before operation in 6 months in patients with abnormal pronunciation, the injury of recurrent laryngeal nerve was considered to be transient, or it was permanent.

MDT in our center began to take shape in July 2013, it composed of a head and neck surgeon,

Table 1. Detailed information of 25 consecutive patients

Case	Sex	Age	Pathology	TNM	Treatment	Transient hypoparathyroidism	Permanent injury of recurrent nerve	Follow up
1	F	42	MTC	T4aN1bM0	TT, BLND, SN	Yes	No	Alive
2	M	58	MTC	T4aN1bM0	TT, BLND, SN	Yes	No	Alive
3	F	65	FTC	T4aN0M1	TT, EBT, IR	No	No	Alive
4	M	60	FTC	T4aN0M1	TT, EBT, IR	No	No	Alive
5	M	48	PTC	T3N1bM1	TT, BLND, EBT, IR	No	No	Alive
6	F	49	PTC	T4aN1bM0	TT, BLND, SN, IR	Yes	No	Alive
7	M	56	PTC	T4aN1bM0	TT, BLND, SN, IR	No	Yes	Alive
8	M	45	PTC	T4aN1bM0	TT, BLND, IR	No	No	Alive
9	M	53	PTC	T4aN1bM0	TT, BLND, SN, IR	Yes	Yes	Alive
10	M	40	PTC	T4aN1bM0	TT, BLND, IR	No	No	Alive
11	F	61	PTC	T4bN1bM0	TT, BLND, SN, IR	No	No	Alive
12	M	63	PTC	T4bN1bM0	TT, BLND, SN, IR	No	Yes	Alive
13	F	70	PTC	T4aN1bM0	TT, BLND, SN, IR	Yes	No	Alive
14	F	73	PTC	T3N1bM0	TT, BLND, IR	No	No	Alive
15	F	46	PTC	T2N1bM0	TT, BLND, SN, IR	No	No	Alive
16	F	54	PTC	T4aN1bM0	TT, BLND, IR	No	No	Alive
17	F	53	PTC	T4bN1bM0	TT, BLND, SN, IR	Yes	Yes	Alive
18	F	57	PTC	T4bN1bM0	TT, BLND, SN, IR	No	Yes	Alive
19	F	54	PTC	T4aN1bM0	TT, BLND, IR	No	No	Alive
20	F	64	PTC	T3N1bM0	TT, BLND, SN, IR	Yes	Yes	Alive
21	F	68	PTC	T2N1bM0	TT, BLND, IR	No	No	Alive
22	F	47	PTC	T3N1bM0	TT, BLND, IR	Yes	No	Alive
23	F	49	PTC	T3N1bM0	TT, BLND, SN, IR	No	No	Alive
24	F	57	PTC	T4aN1bM0	TT, BLND, IR	No	No	Alive
25	F	59	PTC	T4bN1bM0	TT, BLND, SN, IR	Yes	Yes	Alive

M: male; F: female; MTC: medullary thyroid carcinoma; FTC: follicular thyroid carcinoma; PTC: papillary thyroid carcinoma; TT: total thyroidectomy; BLND: bilateral lateral neck dissection (region II-V); SN: Sternotomy; EBT: Excision of bone tumor; IR: Iodine radiation.

a radiology doctor, a bone surgeon, a brain surgeon, a pathologist, a thoracic surgeon, a vascular surgeon and a medical oncologist. An outpatient visitor of our department was usually firstly evaluated by an expert (Wei Du, MD, PhD), and then the doctor decided whether a MDT was performed mainly according to the disease stage, clinical investigations and radiologic images. Once a MDT was performed, the following treatment procedures were consistent with the records in the group consultation.

All data was analyzed by descriptive statistics using SPSS 13.0.

Results

A total of 25 (7 males and 18 females) patients were enrolled. The mean age was 55.6 (range: 42-73) years old. Papillary thyroid carcinoma was the most common pathologic subtype (84%), followed by medullary thyroid carcinoma (8%) and follicular thyroid carcinoma (8%). Based on UICC 2010 classification, 18 (72%) cases were staged as T4, 5 (20%) as T3, and 2 (8%) as T2. All except two had a positive neck node disease, and the two patients had solitary bone metastasis, one had tibial metastasis, the other had scapula metastasis. Therefore, all patients were staged as advanced (**Table 1**).

Total thyroidectomy was performed in all patients, bilateral lateral neck dissection (region II, III, IV and V) was performed in 92% of the patients. Sternotomy was required in 14 (56%) patients. Excision of bone tumor was implemented within 3 weeks after the complete of thyroid surgery.

No patients had perioperative infection, hematoma, and death. Transient hypoparathyroidism occurred in 9 (36%) patients, but there was no permanent hypoparathyroidism. 7 (28%) patients had permanent injury of recurrent laryngeal nerve.

In our limited follow up duration (range: 8-40 months), all patients were alive.

Discussion

MDT had become an important part of cancer treatment. In patients with non-small cell lung carcinoma, Forrest et al. [9] reported MDT could lead to prolonged survival. Similar finding was also noted in esophageal cancer patients described by Stephens et al. [10]. Several researchers had evaluated the benefit of MDT in the treatment of head and neck cancer. Bergamini et al. [2] presented staging refinement of disease or changes in the treatment plan in about 60% patients were leaded by a MDT approach. Moreover, Liao et al. [3] described an association between improved outcome and multidisciplinary team care, including better neck control, disease-specific survival and overall survival. However, there was absence of detailed information regarding how MDT benefit patients with thyroid cancer, at least three factors might be responsible for such condition. Firstly, there were great improvements of surgical technique in thyroid operations nowadays; secondly, the majority of thyroid cancers were regarded as early stage, they could be completely resected by head and neck surgeons; thirdly, poorer prognosis in squamous cell carcinoma of head and neck would cause more effort to improve curative efficacy.

Up to now, only two origin reports about MDT in thyroid cancer in Medline were available. Pasquale et al. [7] depicted a case of a giant mandibular metastasis from follicular thyroid carcinoma, the patient had undergone total thyroidectomy, partial mandibulectomy, and ^{131}Iodine ablation. Forty-six months after the intervention the patient was well and in good general condition. Another study performed by Quan et al. [8] reported a series of eight consecutive patients with symptomatic spinal metastases due to thyroid cancer, at an average of 50 months after MDT all remaining 6 patients were able to perform activities of daily living and had no significant pain or neurologic symptoms. Both the two researches seemed like to suggest MDT do well in advanced thyroid cancers, but they were limited to the small sample size.

Current study was the largest in sample size. Similar with the above-mentioned research [8], bone metastatic tumors as well as primary lesions in the two patients were successfully resected, they were all alive until now. It suggested the usefulness of MDT in patients with resectable distant metastatic lesions.

All except two had a positive neck disease with a stage of N1b in current study. In fact, we considered that the N1b stage could not exactly reflect how serious the degree of lymphatic metastasis. All these patients had extensive node diseases in mediastinum in preoperative images. Owing to complex anatomical structures in the mediastinum, any misjudgment was associated with a potentially lethal cocktail. Therefore, one of the main goals in MDT was to evaluate the necessity and risks of sternotomy. As high as 60.8% of the patients underwent sternotomy, it would be greater if MDT had not been performed because of overestimation of the surgery difficulty by head and neck surgeons. Although most of this tumor was staged as T4, they could be resected by us alone after rigorous preparation. Therefore, the node stage played a key role in deciding whether MDT is planned.

Complication of hypoparathyroidism or recurrent laryngeal nerve injury relatively higher than others [11]. Especially it was noted that 28% of the patients had permanent injury of recurrent laryngeal nerve, but all these nerves were proven to be invaded and excised during operation. No permanent hypoparathyroidism was found. All these findings indicated a high reliability of MDT in treating patients with advanced thyroid cancers.

Summary, the node stage plays a key role in deciding whether MDT is planned, and MDT is reliable in treating patients with advanced thyroid cancers with low permanent complication.

Disclosure of conflict of interest

None.

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