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Annals of Clinical Cytology and Pathology

Short Communication

The Role of Surgeons, Endocrinologists and Oncologists in Management of Anaplastic Thyroid Carcinoma

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Submitted: 24 September 2018
Accepted: 20 October 2018
Published: 23 October 2018
ISSN: 2475-9430

Keywords
- Anaplastic thyroid carcinoma
- Tracheostomy
- Surgical intervention
- Chemo-radiation therapy

Abstract

Background: Anaplastic Thyroid Carcinoma [ATC] is an uncommon and lethal type of thyroid cancer. It accounts for only < 2 % of all thyroid cancer cases. It is the cause of about one-half of all thyroid carcinoma deaths. This cancer has a very low cure rate even with the best treatments. ATC invades adjacent structures and metastasizes extensively to cervical lymph nodes and distant organs. Tracheal invasion presents in 25% of the cases at the time of presentation that needs a tracheostomy. Only a small portion of patients can undergo surgical resection in hopes of curing it. In this study, we aimed to define the role of surgeons, Endocrinologists and Oncologists in management of anaplastic carcinoma of thyroid

Material and methods: In a retrospective study we reviewed the records of patients with [ATC] referred to our hospital Razi, Arya and Golsar Iran, Rasht city between 2004-2017. In all cases, the diagnosis was confirmed by pathological findings. The data including: symptoms, signs, diagnosis tools, surgical approaches, chemo radiation therapy and survival rate were collected and analyzed.

Results: We identified 41 patients with ATC. Twenty eight of patients were male and the remaining was female. Twenty five of patients presented with hard neck mass, 12 of these patients had sever dyspnea and dysphagia, Ten cases with hard neck mass and pain and ten of patients admit with dyspnea and strider. FNA and core needle biopsy was performed on 35 patients and anaplastic carcinoma of thyroid was documented in 29 patients and two patient revealed suspected cells in FNA. Ten patients admit with sever dyspnea and stride or that underwent tracheostomy and biopsy. The surgical intervention was conducted on 31 patients who diagnosed on FNA and core needle biopsy for [ATC]: Total thyroidectomy in 9 cases, subtotal thyroidectomy in 10 cases, debulking surgery in 12 cases and 5 cases just tracheostomy. Final pathology of all these patients was ATC. All patients referred for chemo radiation- therapy after the operation. All of our patients died between 1 to 10 months after surgery and chemoradiation therapy.

Conclusion: Surgical intervention even in early stage not increase survival but can improve the quality the life .We conclude the role of surgeon in ATC is to maintain a safe airway and tissue sample for definitive diagnosis. Endocrinologists role are early diagnosis and Oncologists can decrease the size of tumour.

INTRODUCTION

Anaplastic Thyroid Carcinoma [ATC] is only 1% of all thyroid cancer cases and is the most poorer prognosis of all thyroid cancers [1,2]. ATC has a very low cure rate with the very best treatments [2,3]. Most patients with ATC do not live 1 year from the day when they are diagnosed [2,3]. Lymph node metastasis present more than 90% of cases at the time of diagnosis and spreads to the lungs are present in 50% of patients at the time of diagnosis [2-5]. Most of these cancers are so aggressively attached to vital neck structures that they are inoperable at the time of diagnosis and Tracheal invasion presents in 25% of the cases at the time of presentation that needs a tracheostomy [2-7]. Peak onset of anaplastic thyroid cancer is in at age of 65 years old and older [2,3]. ATC more common in males than in females by a 2:1 ratio [3-8]. It can occur many years after radiation exposure [2-9]. The

distant spread [to lungs or bones] is very common even when it's first diagnosed [2-4]. The overall cure rate is very low. It typically requires a very aggressive treatment plan with surgery, radiation, and sometimes even chemotherapy [1,2,11-13]. It often requires a tracheostomy to maintain the patient's airway [4,6,14]. Only a small portion of patients can undergo surgical resection of the cancer in hopes of curing it [2,14,15]. For those patients who are diagnosed at an earlier stage, a total thyroidectomy is necessary [2-14]. Many patients, especially those who have advanced cancer and cannot undergo surgical resection, will benefit from external-beam radiation [2,7,13,15,16]. Chemotherapy is another option treatment for ATC [2,15,17-19]. For treatment of ACT there is controversy about the role of surgeons. The aims of this study are to define the role of surgeon, endocrinologists and oncologists in the management of anaplastic carcinoma of thyroid and surgery can increase the survival rate? Because ATC is rare and the role of surgery is not well known.

MATERIALS AND METHODS

In this retrospectively study, we evaluated all Patients with anaplastic carcinoma of the thyroid [ATC] who were treated with surgery and chemoradiation therapy between January 2005 and January 2017 **in Razi, arya and Golsar Hospital-Rasht-Iran of Guilan University Medical Sciences [GUMS] and Respiratory inflammatory Diseases Research Center. This study was approved by the regional committee for clinical research ethics of our university. We reviewed the record of 41 patient's data. All patients with thyroid lymphoma .invasive tumors to thyroid and metastatic carcinoma to thyroid were excluded from this study. The data including: symptoms, signs, diagnosis tools, surgical approaches, chemoradiation therapy and survival rate. Data were collected from record of patients and analyzed by using SPSS version 21.**

RESULTS

In this retrospective study, we treated 41 patients with anaplastic carcinoma of the thyroid [ATC]. Twenty eight of patients were male with an average age of 55-75 years and a mean age of 65 years. The thirteen remaining female patient's aged were from 32 to 72 years and their mean age was 62 years. Twenties eight patients had history of multi nodular goiter for long time. Of eight patients who underwent previous thyroid surgery, five had papillary thyroid carcinoma and three multi nodular goiters. Five patients had previous neck radiation therapy. Twenty five of patients presented with hard neck mass and mild dyspnea. Ten cases with hard neck mass, moderate dyspnea and pain, twelve patients present with dyspnea and dysphagia, ten patients present with sever dyspnea that underwent tracheostomy and biopsy. FNA and core needle biopsy was performed on 35 patients and anaplastic carcinoma of thyroid was documented in 29 patients and two patient [32 and 35years old female] exhibited suspicious of [ATC] cells in FNA. Ten patients underwent tracheostomy and biopsy because of upper air way obstruction. The surgical intervention was conducted on 31 patients who diagnosed on FNA and core needle biopsy and including: Total thyroidectomy in 9 patients, subtotal thyroidectomy in 10 cases, debulking surgery in 12 cases and of these patients just tracheostomy was performed in 5cases. Six patients underwent for feeding gastrostomy because of dysphagia. Ten patients with severe dyspnea underwent tracheostomy and biopsy. Final pathology of all these patients was ATC. All 41 patients referred for c chemoradiation - therapy after the operation. Two thyroidectomies cases with32-35 years-old female died 30 day after surgery because of rapid recurrence and bleeding of operation site and growing of tumor with picture of suffocation even with tracheostomy. The others older thyroidectomy patients died 2 and 10months following surgery because of recurrence and suffocation and respiratory failure, All patients who underwent debulking operation, died after two to 6 month during chemoradiation time due to recurrences and respiratory failure. In those patients who were subjected to biopsy, unfermented to chemoradiation therapy, immediate intensive recurrence presented as vegetation and ulceration of biopsy site occurred after four courses of chemoradiation therapy with subsequent death in two to four month. All patients underwent to tracheostomy in current of treatment. Therefore all of our patients died between one to ten months after presentation and with surgery and chemoradiation therapy [demography of patient shown in Tabe1].

DISCUSSION

Anaplastic thyroid carcinoma is the least common (only 1%) of all thyroid cancer cases and most lethal of all thyroid cancers [2]. The annual incidence of anaplastic carcinoma is about two per million persons [4,6,8]. This cancer has a very low cure rate with the best treatments [2,5]. ATC often arises within a more differentiated thyroid cancer or even within a long standing multinodular goiter [2,3,9]. Like papillary cancer, ATC or may arise many years (more than 20) following radiation exposure [2,3,7,9]. Patients with ATC are older than those with others carcinoma of the thyroid [2,6]. The mean age at diagnosis is 65 years and fewer than 10% of cases are younger than 50 years [2,6]. In our study, two patients were younger than 35 year old. Fifty percent of tumors are known to occur in women, andin our study, 28 of patients were female. Approximately 20% of patients with [ATC] have a history of differentiated thyroid cancer [2,9]. In our report, eight patients had a previous operation of combined lobectomy and thymectomy for papillary carcinoma. Transformation from differentiated to ATC has been described in patients followed through serial biopsies of the thyroid [2,3,9]. These findings led support to the hypothesis that [ATC] develops from more differentiated tumors arising from one or more differentiating events [2,3,9].In this study multinodular goiter for long time in twenty eight patients, previous thyroid surgery in eight and Previous neck radiation therapy in five patients.

Symptoms and signs of thyroid lymphoma mimic ATC and include: A lump in the front of the neck, swollen lymph nodes in the neck ,hoarseness or changes in voice, difficulty in swallowing or neck pain, which may also extend to the ears, Coughing and grow faster than other forms, they tend to cause larger and firmer lumps [1,2,3,4,6,7]. But in our practice we manage five patients with thyroid lymphoma by surgery and oncologic treatment. The prognosis of thyroid lymphoma is very better than ATC [1,3,6,7]. Tracheal invasion is present in 25% at the time of presentation in the ATC, because of this complications, many patients with anaplastic thyroid cancer

Table 1: Demographic 41 of patients.

	N =41
Male/female	28/13
Age of male patients, mean (years)	65 (55-75)
Age of female patients, mean (years)	62(32-72)
Presentations:*	
Hard neck mass and dyspnea	25
Hard neck mass , pain and dyspnea	10
Dyspnea and dysphagia	12
Distress and strid or	10
PMH:	
Multinodular goiter for long time	28
Previous thyroid surgery	8
Previous neck radiation therapy	5
Diagnosis tools: FNA	13
Core- needle	18
Tracheostomy and Open biopsy	10
Kinds of surgery:	
Total thyroidectomy	9
Subtotal thyroidectomy	10
Debulking +5 just tracheostomy	12
Tracheostomy and Open biopsy	10
Survival : Total thyroidectomy :month (mean)	6-10
Subtotal thyroidectomy	4-8
Debulking +5 just tracheostomy	3-6
Tracheostomy and Biopsy	1-4
· One patient may present with two or more than symptoms and signs	

need a tracheostomy following treatment [4,6,14]. In this study all patients needed tracheostomy following therapy. Anaplastic thyroid cancer spreads to the lungs in 50% of patients at the time of diagnosis and most of these cancers are so aggressively attached to vital structures of the neck and they are inoperable at the time of diagnosis [2,1,12,14]. The first step in diagnosis is a medical history and physical examination, as our patients. Blood and imaging tests for thyroid cancer may follow [2,3,4]. A thyroid biopsy with FNA, core–needle or open surgery to confirm the diagnosis of thyroid cancer [2,14,22,24,25], as our study, we used this tools for diagnosis. Usually the patient feels a mass in the anterior of the neck and turn to an endocrinologist. The endocrinologist usually does a fine needle aspiration (FNA) or with a core needle biopsy, but sometimes the patients referred to surgeons for surgical biopsy [2]. The tissue specimen is examined by a pathologist the report is usually is ATC as our patients in this study. Sometimes the tumor may grow fast and that it compresses the airway, or trachea, and causes difficulty in breathing. If airway compression occurs, a tracheostomy is often needed in this stage [2,24-26] as twelve of our patients in present study whose unfermented to tracheostomy and biopsy. After diagnosis ATC, the surgeon also evaluates the patient conditions to determine if the tumor can be safely resected, total or subtotal thyroidectomy performed. If the tumor is not respectable, debulking should be done [11,21,12]. In this study we performed total or subtotal thyroidectomy or debulking surgery in patients respectively. If the tumor compresses the esophagus and interfering with the patient's ability to swallow, a feeding tube to be inserted into the stomach or intestine [17,18,19,20]. Seven of our patients needed feeding tube and ten needed emergency tracheostomy. After these procedure, patients referred to endocrinologist, chemotherapy oncologist and a radiotherapy oncologist [2,16,17,18,19,20,27], as in our study we consult with endocrinologist, chemotherapy oncologist and radio- oncologist. Maximum survival of our patients was 10 month. But, DeCrevoisier Showed a study of 30 patients, in these study six patients had metastasis at the time of diagnosis. Three of them died within 6 months of diagnosis, and all others died by 16 months, And 24 of 30 patients had no metastasis at the time of diagnosis. Twelve of them died within 12 months of diagnosis, and 6 were still alive after 60 months [28].

The median survival was in a study in 134 patients was three months after diagnosis, and only thirteen patients survived longer than 1 year [2].

In Mayo Clinic a study shows that operation [ATC] was associated with a longer life expectancy than palliation alone (3.5 months rather than 3 weeks), because patients selected for operation are likely to have less extensive disease. The difference in survival between patients who underwent extensive operation and those who underwent biopsy alone followed by radiation therapy was small and did not reach statistical significance [29].

In a study by Akaishi, they reviewed 100 patient charts with ATC. Only six patients were noted to have a small [ATC], Total resection was achieved in 24 of 70 patients. External radiation was administered to 78 cases; fifteen patients were able to receive multiple modalities of treatment as surgery, radiotherapy and chemotherapy, Survival rates at 1 year were 72.7%, 24.8%, and 8.2% respectively, a complete resection associated with better overall survival than debulking [30].

Prognostic factor is related to extent of the disease, and presence or absence of local and regional metastases [14,15,23]. Tumor size also appears to be important. In two studies, the two years survival was 25% and15% in patients with tumor less and larger than 6 cm respectively [31,32]. Variables that may predict a worse prognosis include older age at diagnosis, maleness and dyspnea as a presenting symptoms [2,21,22]. Patients who were previously treated for differentiated carcinoma and subsequently developed anaplastic carcinoma had outcome similar to those without an antecedent thyroid cancer [2,21,22]. In this study old patient, dyspnea, dysphagia and previous neck radiation had poor prognosis but size of tumors was not a prognostic factor.

LIMITATIONS

One limitations of this study is the lack of data for patients not undergoing surgical resection. A limitation is inherent in most register of this kind and may reduce the external validity.

Another limitation may be related to classification, of causes of death patients dying at home or other place may not have been correctly classified. The final limitations were the records of some patient and follow–up were not complete and for solution of these problems our team turn to their homes and re-evaluated the all records of patients.

CONCLUSION

When a Patients present with a rapidly expanding hard neck mass and pain, require rapid histopathologic confirmation of the diagnosis with FNA, core–needle biopsy and even open biopsy

as soon as possible, because anaplastic carcinoma of thyroid present with these symptoms which show these symptoms and signs are due to an aggressive cancer which leads to imminent death. Total thyroidectomy followed by radiotherapy and chemotherapy is mostly indicated to prolong patient's survival whenever tumor size is small. Even though a small improvement in survival was observed with complete excision and aggressive multimodality therapy therapeutic dilemma. Only those patients, whose pathology is confined to thyroid with small tumor size, can benefit from treatment but can have a short survival time. The role of surgeons in ATC is opening the airway and diagnosis and quality of life may become better but cannot increase survival as others cancer of thyroid.

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Cite this article

Aghajanzadeh M, Rimaz S, Hedayati MH, Mohammadi F, Mehrdad M, et al. (2018) The Role of Surgeons, Endocrinologists and Oncologists in Management of Anaplastic Thyroid Carcinoma. Ann Clin Cytol Pathol 4(6): 1117.