Quantitative rating scale based on preoperative prediction of lymph node dissection in patients with thyroid cancer

Research program

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I. Background of the study

The incidence of papillary thyroid carcinoma (PTC) has been on an elevated trend in recent years, and lymph node metastasis is present in 20%-50% of PTC patients. Usually, lymph node involvement in PTC patients is related to the recurrence of PTC after surgery, and 30% of patients recur without lymph node dissection, among which the risk of cervical central lymph node metastasis is the greatest, so it seems to be a good choice to perform lymph node dissection for patients after thyroidectomy, but in fact, there is a controversy at home and abroad as to whether to perform lymph node dissection or not. The 2021 Chinese Society of Clinical Oncology (CSCO) guidelines for the diagnosis and treatment of differentiated thyroid cancer state that prophylactic central lymph node dissection (PCND) may increase the incidence of postoperative complications, but due to the high metastatic rate of PTC and the ability of PCND to effectively prevent recurrence and reoperation, countries in the East Asian region perform prophylactic lymph node dissection on almost all patients with PTC. However, for more countries in Europe and the United States, performing PCND has become a non-essential, individualized option.

The aim of this study is to produce a new type of scoring scale by collecting multifactorial data from patients who have undergone previous thyroidectomy from 2021-2023, to individualize the scoring of patients based on

a variety of factors prior to surgery, to be able to more accurately predict whether a patient does have lymph node metastasis and whether prophylactic lymph node dissection is needed before surgery is performed, and to be able to avoid complications from surgery for patients who do not need dissection. For patients who do not need lymph node dissection, it can avoid complications caused by surgery, while for patients who do have lymph node metastasis, it can prevent the recurrence of their cancer. This will change the current situation in which it is impossible to accurately determine the actual situation through simple preoperative examination or to perform prophylactic lymph node dissection for all PTC patients.

II.Purpose of the study

To create a quantitative rating scale for preoperative prediction of the need for lymph node dissection in patients with thyroid cancer.

Objects of the study

1. Selection of research subjects

From 2021 to 2023, 500 patients with previous papillary thyroid cancer surgery were selected in the Second Affiliated Hospital of Xi'an Jiaotong University for the production of quantitative scoring scales, as well as 300 patients with subsequent new admissions of papillary thyroid cancer for validation.

Inclusion criteria: (1) Age 16-80 years old;

(2) Patients with papillary thyroid cancer;

(3) Consciousness and ability to communicate normally.

Exclusion criteria: (1) Preoperative puncture pathology suggests that there are other types of tumors, such as medullary carcinoma or undifferentiated carcinoma;

(2) Age less than 16 years old.

Exclusion criteria: (1) Postoperative pathology suggests that there are other types of tumors, such as medullary carcinoma or undifferentiated carcinoma.

IV. Observation indicators

Basic information of patients: gender, age, height, weight, BMI and whether lymph node dissection was performed during previous surgery;

Tumor primary foci: unilateral/bilateral tumor, tumor diameter size, tumor focality, tumor invasion, and cases suggesting lymph node metastasis;

Preoperative ultrasonographic manifestations: cystic solidity of the tumor, echo intensity, whether the border is clear, whether there is calcification, aspect ratio, and whether there are enlarged lymph nodes in the neck;

Preoperative laboratory tests: TSH, TPOAb, TgAb, and blood calcium;

Genetic test results: TERT gene polymorphism (C250T), TERT gene polymorphism (C228T), NRAS gene polymorphism (Q61R), B-raf gene mutation.

The above data were collected from the medical records of previous patients to create a quantitative rating scale, and then new patients were evaluated using the scale and the above data information was collected from the new patients for comparison and validation.