Progress on common thyroid diseases and systemic immune inflammation index

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Abstract: Thyroid disease belongs to the endocrine system disease, which is relatively common in clinical practice, mainly including hyperthyroidism, thyroiditis, thyroid nodules, hypothyroidism and so on. Thyroid tumor is a relatively common clinical endocrine and head and neck tumor, among which the most common malignant tumor is differentiated thyroid cancer (differentiated thyroid carcinoma, DTC), with a high incidence rate, good prognosis, and common cervical lymph node metastasis or distant metastasis. This article mainly provides a simple overview of the concept of systemic immune inflammation index, and makes an in-depth analysis of the relationship between inflammation and disease pathogenesis and systemic immune inflammation index and thyroid disease, in order to provide a theoretical reference for clinical and related personnel.

Key words: Thyroid disease; thyroid tumor; systemic immune inflammation index; research progress

1. Introduction:

In recent years, the number of clinical patients with thyroid disease is increasing. According to the data statistics, thyroid cancer ranks among the top five female malignant tumors in China. In thyroid diseases, undifferentiated thyroid cancer (ATC) has a high invasive ability, and its clinical treatment effect and prognostic effect are poor, but the clinical incidence rate is relatively low. However, DTC has a high incidence rate in the clinic, and most patients have a good prognosis after treatment, but the cervical lymph node metastasis and distant metastasis are still more common. Therefore, the early diagnosis of related diseases is of great significance for the clinical treatment and prognosis. At present, ultrasound and fine needle aspiration cytology are mainly used to check the benign and malignant tumors of thyroid nodules. In recent years, with the clinical study of inflammation, tumor development and development mechanism, part of the correlation between inflammatory factors and malignant tumor has been confirmed, these inflammatory factors and endocrine tumors, digestive tract malignant tumor has a very close correlation, so the common thyroid disease occurrence and inflammatory factors also have a certain relationship. This article mainly analyzes the relationship between common thyroid diseases and inflammatory factors, and reviews them, in order to provide a clinical reference.

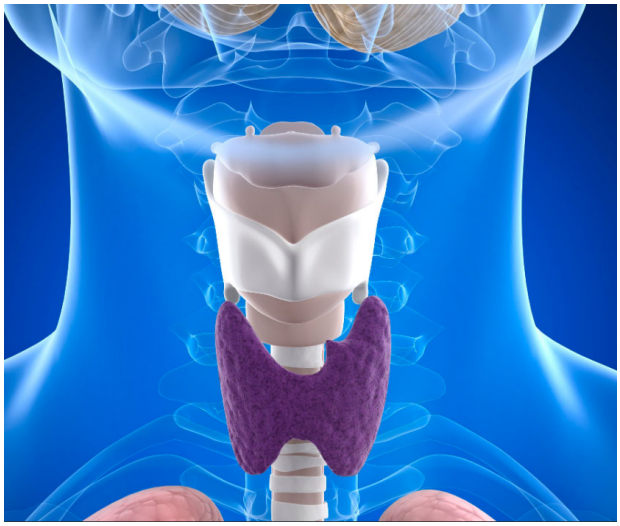

Fig.1 thyroid disease

2. Common types of thyroid diseases

Clinical more common thyroid diseases mainly include thyroiditis, thyroid nodules, hypothyroidism, hyperthyroidism, etc., including thyroid nodules is the most common clinical thyroid disease, mostly benign, mainly for thyroid adenoma or thyroid cyst, but there are still a small number of malignant thyroid nodules, malignant nodules mainly for thyroid cancer. Head and neck tumors and endocrine tumors are more common in thyroid cancer. According to the characteristics of the case, thyroid follicular epithelial cell malignancy can be

classified into ATC and DTC. Differentiated thyroid cancers account for 90% of all types of thyroid tumors, mainly including follicular thyroid carcinoma (FTC) and papillary thyroid carcinoma (PTC), among which the latter is more common.

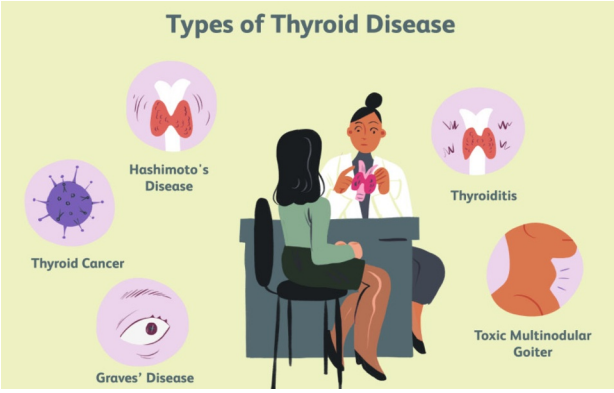

Fig.2 types of thyroid diseases

3. Systematic immune inflammation index concept

systemic immune inflammation index (SII) is one of the comprehensive new inflammatory indicators. It is an objective indicator to evaluate the balance between systemic inflammation and immune response, and it has a very close relationship with a variety of diseases. This index was first proposed in 2014, mainly using lymphocyte, platelet count and absolute neutrophil value to calculate a new index, the formula: absolute platelet count absolute neutrophil absolute value / lymphocyte absolute value[1].

4. Inflammation and disease occurrence mechanism

The clinical assessment time between inflammation and cancer is relatively long, and it first mainly stems from the assumption that chronic inflammation is the direct cause of infection and damaged tissue ". Until the 19th century, some scholars put forward the relationship between inflammation and cancer, clinical scholars for this relationship launched a lot of experiments, according to research shows that in the micro environment of inflammatory reaction and immunity in the occurrence and development of tumor can play a very important role, and can make the tumor occurrence, development speed up, and will, to a certain extent, affect the prognosis of patients[2]. In practical research, some scholars have proposed that inflammatory reaction and immunity can not only destroy cancer cells, but also create a very favorable microecological environment for cancer cells, and promote the development of cancer cells. Cancer factors caused by inflammation and infection account for about 25% of all cancer factors, and mutagenic damage to DNA is the major feature of cancer caused by inflammation. In the study, it was found that inflammatory damage-related DNA and cancer stem cells will promote cancer development, and have a certain aggressiveness[3]. In the innate immune system and adaptive lymphocytes belong to one of the most basic components, is also the basis of immune editing and monitoring cells, can respond to immune condition of immune cells in the body, the actual number of lymphocytes and human body has a close correlation between actual immunity, it can stimulate other cells, thus the effect of killing or killing cancer cells, so once the number of lymphocytes in human body decreased human cancer effect, which is tumor development in patients have created sufficient conditions. There are relatively many types of white blood cells, such as neutrophils, which account for as much as 70% of the circulating leukocytes in the body, thus indicating that if the neutrophils in the body keep rising, it indicates that the body is infected with inflammation. Because elevated neutrophils can inhibit TNF-A secretion, which leads to increase the release of vascular endothelial growth factor (VEGF) in actual circulation, VGEF plays a very important role in actual circulation, which is also the main source of neutrophils. Not only that, but MMPs together with high levels of VEGF can promote the cardiovascular formation of tumor cells and accelerate the speed of cancer cell spread and proliferation of cancer cells. According to clinical studies, it can be concluded that if neutrophils are activated, then the tumor proliferation rate increases either directly or indirectly. In the coagulation system, platelets can play a very important role, which can effectively control human bleeding and hemostasis. In the experiment, platelets can secrete platelet-derived growth factor (PDGF), transform growth factor- (transforming growth factor-) and VEGF, and promote the formation of new blood vessels[4]. Not only that, it can also promote the proliferation and differentiation of cancer cells, playing a very important role in the spread and growth of cancer cells. In addition, the human body can be related to inflammatory mediators and thrombocytopins. If cancer cells grow in the body, the above factors can lead to an increase in the number of platelets, and then promote the tumor growth. This phenomenon belongs to a vicious circle that cannot be broken. According to the clinical research, the number of platelets will be more and more after the patient enters the advanced cancer, and the SII, NLR and PLR can be calculated through the various indicators in the blood routine, which can ultimately reflect the actual immune status of the patient. With the continuous development of inflammation, the patient's immunity will become lower and lower, leading to the inability to resist cancer factors, coupled with the increasing platelet count and neutrophil count, the patient's immunity will continuously decrease, and eventually increase PLR, NLR and SII.

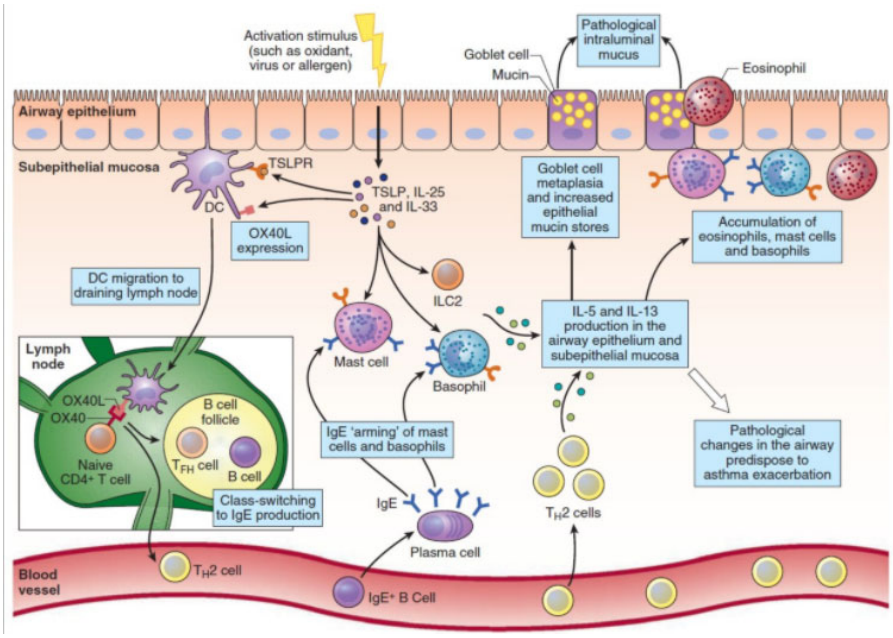

Fig.3 Inflammation and disease occurrence mechanism

5. The relationship between systemic immune inflammation index and thyroid disease

According to the investigation, there is a close association between LMR, SII, NLR and PLR and malignancy[5]. In recent years, more and more scholars have begun to pay attention to thyroid cancer compared to other malignant tumors. Although some studies have shown an association between LMR, SII, NLR and PLR and thyroid cancer, some studies have believed that there is an association between high and low NLR value and thyroid lymph node metastasis and thyroid tumor size, but the study of clinicopathological characteristics shows no association with PLR. The above reasons may be due to the lack of sample size, so the clinical research needs to be conducted in depth. To study the relationship between thyroid cancer and SII, issued in the study, a close correlation between tumor multiple foci and SII, no other correlation has been found, and the benign tumor SII is significantly lower. Therefore, high SII can be used as a marker to judge the benign and malignant thyroid tumors. However, because SII and NLR are both single indicators, they will lack a certain reference value in clinical research, and they can be applied together. Subacute thyroiditis (SAT) is more common in acute thyroid inflammatory diseases. Compared with healthy people, SAT patients have high NLR values and PLR values, but patients over 45 years old will have significantly lower PLR values and NLR values before surgery. Patient PLR varies with the size of the tumor, and the larger the tumor, the higher the value, but no relatively significant association with SII has been found. Related researchers analyzed PLR, NLR, study the significance of thyrotoxicosis and change, according to the study, some thyroid disease patients with liver function abnormalities, the PLR, NLR will appear significantly rise, thus, we know that PLR, NLR can predict and identify methysitis[6]. Although the current clinical has confirmed the relationship between malignant tumors and SII, NLR, PLR, but still lack of clinical research on thyroid cancer, most research mainly around PLR, NLR, the lack of SII research, so the current clinical has not been clear SII for the impact of thyroid disease occurrence, development and prognosis, so clinical still need to continue to study.

Conclusion: Thyroid disease is an endocrine system disease, and it accepts more patients clinically every year, and the number of thyroid malignant tumors admitted is getting more and more right. However, the follow-up after discharge can understand that most patients have achieved a relatively good prognosis. Nevertheless, early clinical diagnosis of the disease is still needed to improve the therapeutic effect. However, simple physical examination can not accurately judge the benign and malignant tumors of thyroid nodules, so it is necessary to rely on various tools or pathological biopsy to judge its nature. However, pathological biopsy requires a relatively high level of doctors, and the price of somatic cell expression and genetic screening is relatively high. Most patients admitted to accept blood routine examination, its main advantages for convenience, economic, can be repeated examination, through related cells can calculate the LMR, SII, PLR, NLR value, and by the actual value, the reliability of the test results is still in research and confirmation, but in the thyroid cancer examination this method was affirmed, can effectively guide the clinical diagnosis and treatment.

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