Plasma Cell Mastitis Stages and Related Inflammatory Factors and Their Signaling Pathways

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Abstract: Objective: To study the stage of plasma cell mastitis and related inflammatory factors and the mechanism of its signaling pathway. Methods: Select the patients with cell mastitis to be tested (50 cases) as the research goal, and the income time is from August 2017 to September 2019; analyze TNF-α/NF-κB and IL6/JAK/STAT3 in the patient's tissues (Signal pathway) correlation and mechanism. Results: Compared with the patients in the chronic phase, the clinical levels of NF-κB, TNF-α, P-JAK, IL-6 and P-STAT3 in the acute phase and subacute phase clinical patients showed large differences, and the statistical value "P< 0.05"; In addition, TNF-α and NF-κB staining showed a large positive correlation, statistical value "P<0.05"; IL-6 and P-STAT3 staining showed a large positive correlation, statistical value " P<0.05". Conclusion: According to the stage of plasma cell mastitis patients, and the expression of related inflammatory factors show a certain correlation, and, TNF-α or NF-κB and IL-6 or JAK and STAT3 signaling pathway, etc., in plasma cells the occurrence and progress of patients with sexual mastitis have a certain impact.

1. Introduction

Plasma cell mastitis is a type of mastitis, but it has special properties, mainly in some women who are not pregnant or not breastfeeding. The obvious signs of this disease are: a. a large number of plasma cells; b. T lymphocytes; c. B lymphocytes and other infiltration. In recent years, the incidence of this disease has gradually increased, but the etiology and pathogenesis of this disease have not been very clear and clear.

Plasma cells mainly come from B lymphocytes, which play a great role in the humoral immune response [1]. IL-6 (also interleukin-6) belongs to an inflammation-sensitive cytokine formed by several types of cells, a. lymphocytes, b. fibroblasts, and c. myeloid cells, which can signal JAK/STAT The pathway is effectively activated to mediate many cellular functions. Moreover, TNF-α (also tumor necrosis factor α) is effectively transferred to the nucleus by the p65DNA binding factor, and then the NF-κB factor is successfully activated, so it has a great regulatory effect in the process of inflammation and immunity [2]. The above inflammatory factors can not only differentiate plasma cells, but also better maintain the survival of plasma cells. Based on this, our hospital selected 50 patients with cellular mastitis for testing (time period: August 2017 ~ September 2019) as the research goal, in order to explore the stage of mastitis and related inflammatory factors, signaling pathways, etc. The details of the mechanism are presented as follows:

2. Information and Methods

2.1 Information

The selection of patients with cellular mastitis (50 cases) from our hospital was selected as the research goal. The time is set from August 2017 to September 2019, and they are all women. The maximum age is 60 years old and the minimum age is 22 years old. The average age is (35.0±7.3) years old; the longest course is 5 years, the shortest 4 days, and the average course time is

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(171.7±7.3) days. Of these, 46 were unilateral, and the remaining 4 were bilateral. Exclusion criteria: (1) People with autoimmune diseases; (2) People with a history of tuberculosis; (3) People with other types of breast diseases or infections; (4) No immunosuppressive intervention in the last six months.

2.2 Observation Indicators

Select the immunohistochemical method to detect the expression levels of inflammatory factors (①TNF-α, ②NF-κB, ③P-JAK, ④IL-6, ⑤P-STAT3) in the tissue of patients with plasma cell mastitis undergoing surgical resection , And then refer to the conventional method for effective scoring; (2) Select PCR method for real-time quantitative detection of the mRNA levels corresponding to the above several inflammatory factors; (3) The expression of the above inflammatory factor-related proteins via “Western bloting technology” The situation is subject to certain tests.

2.3 Statistical Processing,

The detection data of 50 patients with cellular mastitis were entered into “SPSS21.0”, the expression level of inflammatory factors and the mechanism of related signaling pathways were selected to be presented, and “Spearman rank” processing was performed, if “P<0.05” was regarded as statistical There are large differences.

3. Results

3.1 Expression Levels of Inflammatory Factors

In order to better analyze the expression level of the relevant inflammatory factors at the tissue level, the immunohistochemical method was used to detect the plasma cell mastitis tissue and determine its ①TNF-α, ②NF-κB, ③P-JAK, ④IL-6 5. The corresponding expression level of P-STAT3. The final result appears: Compared with the chronic phase patients, the corresponding expression levels of ①TNF-α, ②NF-κB, ③P-JAK, ④IL-6, and ⑤P-STAT3 in the sub-acute and acute phase patients need to increase a lot, and the difference is also very large , P<0.05.

Real-time detection (quantitative PCR detection) of corresponding mRNA levels of ①TNF-α, ② NF-κB, ③P-JAK, ④IL-6, and ⑤P-STAT3, the final results are as follows: the results obtained by immunohistochemistry can be basically consistent And compared with the clinical patients in the chronic phase, the expression levels of ①TNF-α, ②NF-κB, ③P-JAK, ④IL-6, ⑤P-STAT3 in the acute phase clinical patients should be significantly increased, and P <0.05 (difference Big difference). However, the expression levels of ①TNF-α, ②NF-κB, ③P-JAK, and ④IL-6 among clinical patients in the acute phase increased significantly, and P<0.05 (the difference was large).

After a certain test of the expression of the above inflammatory factor-related proteins by “Western bloting technology”, the results are as follows: compared with clinical patients in the chronic phase, in the clinical tissues of patients in the acute phase ①TNF-α, ②NF-κB, ③P-JAK , ④ IL-6, ⑤ P-STAT3 related expression levels should be increased significantly, and P <0.05 (the difference is large). However, the levels of ①TNF-α, ②NF-κB, ③P-JAK, and ④IL-6 in the tissues of clinical patients in the acute phase and subacute phase still showed an increased state.

3.2 Mechanisms of Related Signal Pathways

After detecting the expression levels of some indicators of patients' related inflammatory factors, then explore the related pathways of plasma cell mastitis. The final result showed that IL-6 and p-STAT3 staining showed a positive correlation (P<0.05); and TNF-α and NF-κB staining showed a positive correlation (P<0.05). See Table 1 and Table 2 for details:

Table 1 Statistics the Correlation between Tnf-A and Nf-KB

Proj.	NF-κB		γ	P
TNF-α	+	-	/	/
+	21	7	0.05	0.0081
-	0	2	/	/

Table 2 Statistics Correlation between Il-6 and P-Stat3

Proj.	p-STAT3		γ	P
IL-6	+	-	/	/
+	23	9	0.05	0.0026
-	0	3	/	/

4. Discussion

Plasma cell mastitis is a disease of the mammary gland inflammation, and this disease has substantial features. Especially at present, it has not been explored that the staging of patients with plasma cell mastitis is necessarily related to the correlation of inflammatory factors. The causes of plasma cell mastitis are as follows: first, congenital nipple inversion or nipple development deformity [3-5]; second, breast milk accumulation during lactation; third, mammary gland mechanical Injuries, for example: there is a history of breast tumor surgery or trauma; fourth, the breast produces degenerative lesions; fifth, caused by endocrine factors; sixth, bacterial infections. Some scholars have conducted research and found that anaerobic bacteria in the milk ducts become the main bacteria that induce the purulent inflammatory response of this disease. However, some scholars have found that many patients with plasma cell mastitis contain IK acid-fast staining tuberculosis L-type, which is very likely to be a major cause of this disease, and also proposed that this disease is very special for breast tuberculosis. A subtype. Seventh, immune diseases. The results of many cases are presented: there are many lymphocytes and plasma cells and phagocytic fat foam cells in the inflammatory focus of this disease, confirming the existence of autoimmune reactions [6]. According to the clinical manifestations of the patient, it will be divided into three stages (a, acute stage; b. subacute stage; c. chronic stage) and type 4 (a. occult type; b. abscess type; c. mass type; d. fistula type or It is sinus type), which is convenient for clinical diagnosis and treatment.

Plasma cell mastitis has very complicated clinical manifestations, and the outstanding features are: first, multi-surgery occurs in women who are not breastfeeding between 25 and 40 years old; second, in the acute stage The patient's breasts will appear red and swollen and painful, but the inflammatory reaction is relatively light, and its temperature and white blood cell count and even neutrophil count are normal; third, the first symptom is a breast mass or red skin in the areola Mainly; fourth, nipple discharge is likely to be the only manifestation in the early stage, and the discharge is yellow, thick and greasy [7-9]; fifth, it will be accompanied by swelling of the axillary lymph nodes on the same side, It is soft or tough in texture, and has a tender feeling. It will gradually disappear with the gradual relief of the condition, and there are orange peel signs on the local skin; sixth, the condition is repeated, and long-term treatment is not It will be cured and many fistulas will be formed. Seventh, some patients will be accompanied by erythema of the lower extremities.

In this study, the results presented are: TNF-α and NF-κB staining, IL-6 and p-STAT3 staining showed a positive correlation ($P < 0.05$), which also shows that TNF-α and NF-κB staining, IL-6 and JAK, and STAT3 signaling pathways will affect the occurrence and progression of patients with plasma cell mastitis, and have a great influence in this. However, because there are still some limitations in this study, for example: first, the sample size and pathology type are not very comprehensive; secondly, this study is basically classified as a descriptive study type. After selecting immunohistochemical analysis, it indicates that There is a direct connection between the inflammatory factors and the clinical stage, but whether the signal pathway will affect the progress

of plasma cell mastitis patients has not yet been determined.

In summary, according to the stage of plasma cell mastitis patients and the expression of related inflammatory factors, there is a certain correlation, and TNF-α or NF-κB and IL-6 or JAK and STAT3 signaling pathways, etc. It has a great influence on the progress of patients with plasma cell mastitis.

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