Comparison of Clinical Staging and Secondary Staging of Cervical Cancer

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Research

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Abstract

Objective

To compare the coincidence rate, lymph node metastasis rate, recurrence or uncontrolled rate between the FIGO clinical staging of cervical cancer and the second postoperative staging.

Methods

A retrospective analysis of 999 cervical cancer patients diagnosed and treated in Nanfang Hospital from January 2003 to December 2016 to compare two staging methods through SPSS. Results: There is a significant statistical difference between the results of two stages ($P=0.01$). Meanwhile the consistency is poor (Kappa value = 0.248). There is a significant statistical difference between the number of lymphatic metastases in the two stages ($P=0.01$). Meanwhile the number of lymphatic metastases in the two stages are related ($P=0.01$), but the consistency is poor (Kappa value = 0.102). Lymph node metastasis rate with different FIGO staging are different ($P<0.01$). Lymph node metastasis rate with different postoperative secondary staging are different ($P<0.01$). There is a significant statistical difference in the number of recurrences or uncontrolled between the two stages ($P=0.01$). There is a correlation in the recurrences or uncontrolled number between the two stages ($P=0.01$), consistent poor (Kappa value = 0.252). Different FIGO stagings have different recurrence or uncontrolled rates ($P<0.01$), and different postoperative secondary stagings have different recurrence or uncontrolled rates ($P<0.01$).

Conclusion

There are differences in the coincidence rate, lymph node metastasis rate, recurrence or uncontrolled rate between the two stages. The FIGO staging of cervical cancer needs further improvement.

Background

Cervical cancer is the fourth common malignant tumor in women in the world, and the second common malignant tumor in the female reproductive system. Its incidence is higher in developing countries, and it is a common cause of cancer death in developing countries[1]. In 2018, there were approximately 570,000 new cases of cervical cancer worldwide, and more than 310,000 deaths[1-5]. The staging of cervical cancer is of great significance to its treatment. At present, the staging standard of the Federation International of Gynecology and Obstetrics (FIGO) is widely adopted internationally [6-8]. However, the accuracy of FIGO staging has been questioned. There are datas showing that surgical pathology assessment improves the accuracy of early cervical cancer staging, and the FIGO definition of early cervical cancer needs to be improved [9, 10]. This study compared the preoperative clinical FIGO staging and postoperative secondary staging of cervical cancer through a retrospective study, and compared the accuracy o to provide a basis for the optimization of staging methods.

Materials And Methods

General Information

Participants: Selected from January 2003 to December 2016 in the Department of Obstetrics and Gynecology, Nanfang Hospital, Southern Medical University, patients with complete clinical data and histopathology of cervical squamous cell carcinoma met the inclusion criteria and excluded. After meeting the criteria, a total of 999 patients

were collected as research objects. Among them, there were 121 patients with stage IA cervical squamous cell carcinoma, 512 patients with stage IB cervical squamous cell carcinoma, 253 patients with stage ⅡA cervical squamous cell carcinoma, and 113 patients with stage ⅡB cervical squamous cell carcinoma.

Inclusion criteria: ①Squamous cell carcinoma of the cervix was diagnosed in our hospital based on the patient's symptoms, signs and auxiliary examinations; ②Squamous cell carcinoma of the cervix was confirmed by pathology after surgery; ③The stage was judged to be cervical squamous cell carcinoma according to FIGO staging. ④Receive surgical treatment in our hospital without adjuvant radiotherapy or chemotherapy or radiochemotherapy before surgery. ⑤Perioperative treatment and surgical selection according to the FIGO Guidelines for Diagnosis and Treatment of Gynecological Malignancies.

Research methods

We staged according to the FIGO clinical staging standards. After the operation, all the surgically removed tissues will be sent to the pathology department for examination. Whether gross specimens or pathological sections, at least two deputy chief physicians of the pathology department in our hospital would confirm the pathological results. Then accuracy range of tumor lesions given by the pathological results, was referred to the FIGO guidelines, so we obtained the second postoperative staging. The treatment plan of cervical cancer patients diagnosed and treated in our hospital was determined by the doctors at or above the level of deputy director of the department of gynecology in our hospital according to the FIGO Guidelines. The follow-up plan for the study subjects was also implemented in accordance with the guidelines, and the deadline for follow-up was the patient's tumor recurrence or uncontrolled or December 2018.

By comparing the correlation between FIGO staging and postoperative secondary staging, the rate of lymph node metastasis, recurrence or uncontrolled between two stages, we explored the significance of FIGO staging and postoperative secondary staging.

Statistical methods

All calculation results are sorted and analyzed using IBM SPSS20.0 software. Test level $\alpha=0.05$. When $P<0.05$, the difference is considered to be statistical, and when $P<0.01$, the difference is statistically significant.

Results

Comparison of FIGO staging and postoperative staging

This study separately recorded the staging results of each patient with cervical squamous cell carcinoma before surgery according to the FIGO staging and the results of the second postoperative staging of each patient based on postoperative pathology. In FIGO staging, there were 121 patients in stage IA, 512 in stage IB, 253 in stage ⅡA, and 113 in stage ⅡB. In the second stage, there were 249 patients with stage IA, 673 patients with stage IB, 53 patients with stage ⅡA, and 24 patients with stage ⅡB. According to the chi-square test comparing the results of FIGO staging and postoperative secondary staging, it is concluded that McNemar χ^2 test $P\approx 0.000<0.01$, so there is a significant statistical difference between the results of FIGO staging and postoperative secondary staging; Pearson χ^2 =383.705, $P\approx 0.000<0.01$, so the FIGO staging is related to the second postoperative staging. The Kappa value is 0.248, which is poor. The overall coincidence rate between clinical staging and postoperative secondary staging was 54.25%. In phase IA, there were 106 people matching the two stages, with a compliance

rate of 87.60%. In Phase IB, there were 390 people matching the two stages, with a compliance rate of 76.17%. In phase IIA, 35 people were matching the two stages, with a compliance rate of 13.83%. There are 11 people who match the two stages of Phase II B, and the match rate is 9.73%. Therefore, as the staging increases, the matching rate of the two stagings gradually decreases. Seen in Table 1.

Analysis of the correlation of lymph node metastasis between FIGO staging, postoperative secondary staging

According to the chi-square test comparing the number of lymphatic metastases between FIGO staging and the second postoperative staging, McNemar χ^2 test $P \approx 0.000 < 0.01$, so there is a significantly statistical difference in the number of lymphatic metastases between FIGO staging and postoperative second staging.

Pearson χ^2 =58.905, $P \approx 0.000 < 0.01$, so the number of lymphatic metastases in the FIGO staging and the second postoperative staging were related. Kappa value=0.102, the consistency is poor. According to the chi-square test to calculate the lymph node metastasis rate of different FIGO stages, Pearson χ^2 =73.493, $P \approx 0.000 < 0.01$, the results showed that different FIGO stages and lymph node metastasis rates were different. According to the Fisher probability method, the lymph node metastasis rate of different postoperative secondary stages was calculated to obtain $P0.000 < 0.01$, and the results showed that different postoperative secondary stages and lymph node metastasis rates were different. In FIGO staging, the number of patients with lymph node metastasis in stage IA was 2 and the rate of lymph node metastasis was 1.65%. The number of patients with lymph node metastasis in stage IB was 56 and the rate of lymph node metastasis was 10.94%. The number of patients in stage IIA that showed lymph node metastasis was 62. The lymph node metastasis rate was 24.51%; the number of patients with lymph node metastasis in stage IIB was 40, and the lymph node metastasis rate was 35.40%. In the second postoperative stage, the number of patients with lymph node metastasis in stage IA was 6 and the rate of lymph node metastasis was 2.41%. The number of patients in stage IB with lymph node metastasis was 125, and the rate of lymph node metastasis was 18.57%. The number of patients in stage IIA showed lymph node metastasis patients were 15, and the lymph node metastasis rate was 28.30%. The number of patients with lymph node metastasis in stage IIB was 14 patients, and the lymph node metastasis rate was 58.33%. The number of lymph node metastases in different FIGO stages and surgical pathological stages is shown in the table below. It can be seen that whether it is the FIGO staging or the second postoperative staging, as the staging increases, the rate of lymph node metastasis increases. See Table 2.

Analysis of the correlation of recurrence or uncontrolled between FIGO staging and postoperative change staging

Uncontrolled after surgery means that the tumor continues to exist within the scope of surgical resection included in the radical operation, or the tumor reappears locally within 1 year after the initial operation. Postoperative recurrence means that all tumors seen during the operation have been removed and pathology suggested that there was no tumor at the margin of the surgical specimen, but a tumor appears again 1 year after the operation [11]. According to the chi-square test comparing the number of recurrences or uncontrolled in FIGO staging and the second postoperative staging, it was concluded that McNemar χ^2 test $P \approx 0.000 < 0.01$, so the recurrence or uncontrolled number of FIGO staging and postoperative second staging was significant. Pearson χ^2 =54.433, $P \approx 0.000 < 0.01$, so the number of recurrences or uncontrolled in the FIGO staging is related to the secondary staging, and the Kappa value=0.252, which showed poor consistency. According to the chi-square test to calculate the recurrence or uncontrolled rate of different FIGO stages, Pearson χ^2 =36.120, $P \approx 0.000 < 0.01$, the results showed that different FIGO stages had different recurrence or uncontrolled rates. According to the Fisher probability method, the recurrence or uncontrolled rate of different postoperative stages was calculated to obtain $P0.000 < 0.01$, and the results showed that the recurrence or uncontrolled rate of different postoperative stages was

different. In FIGO staging, 6 persons had recurrence or uncontrolled recurrence in stage IA, with a recurrence or uncontrolled rate of 4.96%; 55 persons had recurred or uncontrolled in stage IB, and had a recurrence or uncontrolled rate of 10.74%. The recurrence or uncontrolled people in stage IIA were 30, and the recurrence or uncontrolled rate was 11.86%. The number of relapsed or uncontrolled stage IIB was 32, and the recurrence or uncontrolled rate was 28.32%. In the second postoperative stage, the number of relapsed or uncontrolled stage IA was 14 people, and the recurrence or uncontrolled rate was 5.62%. The number of relapsed or uncontrolled stage IB was 89, and the recurrence or uncontrolled rate was 13.22%. The recurrence or uncontrolled rate of stage IIA was 13.22%. The number of uncontrolled persons was 14 people, and the recurrence or uncontrolled rate was 26.42%. The number of relapsed or uncontrolled persons in stage IIB was 6 persons, and the recurrence or uncontrolled rate was 25.00%. The recurrence or uncontrolled rates of different FIGO stages and postoperative second stages are shown in the table below. It can be seen that whether it is the FIGO staging or the second postoperative staging, as the staging increased, the recurrence or uncontrolled rate increased. See Table 3.

Conclusion

Among the common tumors in gynecology, such as ovarian cancer and endometrial cancer, mainly adopt pathological staging, and cervical cancer is the only tumor that adopts clinical staging. Accurate staging is an important factor that affects the clinical treatment plan and the evaluation of the prognosis of cervical cancer. At present, the internationally universal standard for clinical staging of cervical cancer is formulated by the International Federation of Gynecology and Obstetrics (FIGO) [12-13]. It can be seen from the source that the first version of cervical cancer The clinical staging was drafted and written by the expert group of the Radiotherapy Committee in 1929, and gradually improved into the latest FIGO staging in 2018 [14]. The birth of the initial clinical staging of cervical cancer was to establish a unified diagnostic standard for evaluating the effects of comparative treatment, and it can also be used to evaluate the prognosis of patients. Before 1999, the main treatment for cervical cancer was radiotherapy [15, 16], and there would be no pathological staging. However, as surgical techniques improve, surgery becomes one of the main treatments [17, 18]. FIGO staging is based on clinical examination results to obtain a pre-treatment staging, which can provide a reference basis for clinicians' diagnosis and treatment judgments. It is mainly based on clinicians' examination judgments. It is highly subjective, but the FIGO staging clearly states that the staging has been determined before surgery cannot be changed, even if it is a pathological result. Previous research results have shown that after surgical exploration, some patients found occult metastases in the pelvis, abdominal aorta, parauterine tissue, omentum, and peritoneal lymph nodes based on postoperative pathology [11]. It is obviously that the clinical staging of cervical cancer is less appropriate in this age of surgery—especially its regulation that it can't be altered by pathology after surgery.

The results of this study showed that there was a positive correlation between preoperative FIGO staging and postoperative staging, and there is a significant difference between clinical staging and postoperative staging. As the staging increased, the matching rate of the two staging gradually decreased and was inversely proportional. In addition, on the mismatch between the two stages—a total underestimation of the FIGO stage was 3.60%. And in the proportion of IA stage assessment was as low as 12.40%, and supplementary treatment was required after surgery. The preoperative clinical stage of some patients is overestimation, and the stage could be reduced according to postoperative pathology. So the FIGO staging obtained before surgery is not accurate and cannot be changed, which is unreasonable. In addition, from the perspective of biopsychosocial medicine model, for patients with postoperative pathological indicated that the FIGO stage was overestimation, maintaining the preoperative staging results would increase the patient's psychological burden and affected the evaluation of the patient's

prognosis. In addition, this article showed that whether it was the FIGO staging or the second postoperative staging, as the staging increased, the rate of lymph node metastasis and the rate of recurrence or uncontrolled increased. Among them, the preoperative and postoperative staging, lymph node metastasis rate and recurrence or uncontrolled were related, but the consistency was poor. The second postoperative staging, FIGO staging of cervical cancer had undergone surgical pathological reassessment, showed the prognosis was different. Therefore, the clinical staging of cervical cancer needed to be further improved. It had certain clinical significance to change the preoperative staging after surgery.

Declarations

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Tables

Table 1 Comparison of FIGO staging and second postoperative staging

Preoperative staging	Preoperative staging	Number of patients in stage IA after operation	Number of patients in stage IB after operation	Number of patients in stage IIA after operation	Number of patients in stage IIB after operation	Number of people in accordance with the stage	Coincidence rate of stages
Phase IA	121	106	14	1	0	106	87.60%
Stage IB	512	110	390	8	4	390	76.17%
Stage IIA	253	22	187	35	9	35	13.83%
Stage IIB	113	11	82	9	11	11	9.73%
the sum	999	249	673	53	24	542	54.25%

Table 2 Analysis of the correlation between FIGO staging, secondary staging and lymph node metastasis

Preoperative by stages	Preoperative staging lymph gland transfer Number of people	After operation Phase IA lymph gland Number of people transferred	After operation Stage IB lymph gland Number of people transferred	After operation Stage IIA lymph gland Number of people transferred	After operation Stage IIB lymph gland Number of people transferred
Phase IA	2	2	0	0	0
Stage IB	56	2	49	3	2
Stage IIA	62	2	47	7	6
Stage IIB	40	0	29	5	6
the sum	160	6	125	15	14

Table 3 Analysis of the correlation of recurrence or uncontrolled between FIGO staging and postoperative change staging

Preoperative by stages	Preoperative staging Recurrence or Not controlled Number of people	After operation Phase IA Recurrence or Not controlled Number of people	After operation Stage IB Recurrence or Not controlled Number of people	After operation Stage IIA Recurrence or Not controlled Number of people	After operation Stage IIB Recurrence or Not controlled Number of people
Phase IA	6	5	1	0	0
Stage IB	55	6	47	2	0
Stage IIA	30	1	20	8	1
Stage IIB	32	2	21	4	5
the sum	123	14	89	14	6