Research Article

Pharmaceutical BIOPROCESSING

Clinical application of perilla oil in breast cancer

Kapil Kumar*[1], Deepak Teotia[1] & Ali Gamal Ahmed Al-kaf[2]

[1]Global Institute of Pharmaceutical Education and Research, Kashipur, Uttarakhand, India

[2]Sana'a University, Faculty of Pharmacy, Yemen

*Author for correspondence: kapilkumar@aliyun.com

Objective: To study the clinical effect of perilla oil on breast cancer.

Methods: A total of 86 breast cancer patients enrolled in our hospital from February 2015 to March 2016 were selected as the objects and divided into control group as well as observation group with the same quantity of cases in each group. The control group were given drug treatment of epirubicin combined with paclitaxel while the observation group were additionally treated with perilla oil capsules besides the treatment in the control group. The clinical efficacy was compared between the two groups.

Results: In terms of short-term efficacy, there was no statistically significant difference in total effective rate between the two groups ($P>0.05$); Compared with the control group, the patient's quality of life in the observation group was significantly higher of statistically significant difference ($P<0.05$); The adverse reaction rate of the observation group was markedly lower than that of the control group with statistically significant difference in between ($P<0.05$).

Conclusion: In breast cancer patients, the treatment of perilla oil plus paclitaxel combined with epirubicin has more obvious effect and is worth popularizing in clinical practices.

Keywords: perilla oil ▪ breast cancer ▪ clinical effect

Introduction

Breast cancer, a kind of disease in breast surgery, refers to the malignant tumor which is growing in patients' mammary epithelial tissue. In early stage it shows no obvious features, but along with development of the disease, it shows main symptoms of breast lumps, nipple discharge, weight loss, fever, fatigue as well as nipple and areola abnormalities [1]. Breast is not an organ that maintains the body's vital activity, so the breast cancer in situ will not threaten the patient's life. But if breast cancer cells are subjected to loose, shedding, spreading and metastasis, it will increase the mortality to a large extent followed by serious consequences in patients. The existence of risk factors of breast carcinoma does not mean that cancer is unavoidable; numerous females having risk factors not ever developed the disease. The risk factors aid in identifying the females who may get help at maximum from screening or other precautionary measures [2]. In clinical practices breast cancer is conventionally treated by surgery, chemotherapy and endocrine therapy. The patients with advanced breast cancer can be treated by paclitaxel combined with epirubicin, which, however, exerts great influence on the quality of life in patients. It is indicated in clinical trials that perilla oil can effective delay the progression of breast cancer in rats and it reaches very similar effect in tests on humans [3]. So it can be concluded that perilla oil has good effect on treatment of breast cancer and enables to further improve the patients' life quality. In this study we selected 86 breast cancer patients in department of thoracic surgery from our hospital as the objects and treated them with different methods to analyze the clinical effect of perilla oil on breast cancer.

Data and methods

General information

A total of 86 female patients with breast

cancer enrolled in our hospital from February 2015 to March 2016 were selected as the objects and divided into control group as well as observation group with 43 cases in each group. In the observation group, the patients were aged 40~75 with a mean age of (57.52 ± 5.83) years, including adenocarcinoma in 16 cases, infiltrating ductal breast cancer in 24 cases and simple breast cancer in 3 cases; While in the control group the patients were aged 42~78 with a mean age of (60.02 ± 6.01) years, including adenocarcinoma in 14 cases, infiltrating ductal breast cancer in 25 cases and simple breast cancer in 4 cases. There was no statistical difference in clinical data between the two groups of comparability (P<0.05).

Inclusion criteria

i. the patients' examination result met the clinical diagnostic criteria of breast cancer;

ii. the expected survival time of all patients was 3 months and the lesion was measurable;

iii. the cancer had a sign of partial metastasis in patients [4].

Exclusion criteria

i. the score of quality of life in patients was less than 60;

ii. the patients received chemotherapy in latest one year;

iii. the patients were allergic to the drug studied in this research;

iv. the patients were suffering from serious failure of multiple organs like heart, liver and kidney;

v. the patients were suffering from other complications [5].

Methods

The control group: given drug treatment of epirubicin combined with paclitaxel. Azithromycin (Jiangsu Wuzhong Pharmaceutical Group Co., Ltd. Suzhou Pharmaceutical Factory, Zhunzi H20020342) whose concentration was 1~2 mg/ml was added into 500 ml sodium chloride injection whose concentration was 0.9% and then the mixture was intravenously injected in patients at the dose of 0.5 g/1 time, 1 time /d; the patients were intravenously injected with paclitaxel (Beijing Pharmaceutical Group Co., Ltd., Zhunzi H20063787) at the dose of 0.9 g/1 time, 1 time /d, with a total of 3 weeks as a course of treatment.

The observation group: The observation groups were additionally treated with perilla oil capsules besides the treatment in the control group. The patients took oral of perilla oil capsules (Harbin Dazhong Pharmaceutical Co. Ltd, Zhunzi B20020577) respectively after morning and evening meals, 1 tablet/1 time, 2 times /d, with uninterrupted oral for constant two cycles during the chemotherapy.

Observation index

The short-term efficacy, quality of life and incidence of adverse reactions were observed and compared between the two groups.

Criteria for efficacy evaluation: according to relate standards established by WHO, the efficacy in patients was evaluated as four levels, namely CR, PR, PD and NC.

Efficiency rate = (CR+PR) / total number of cases *100%.

Statistical methods

SPSS21.0 statistical software was used to analyze and collate the two sets of data. The count data were expressed as "percentage" (%) and assessed by X^2 test. $P < 0.05$ suggested there was statistically significant difference.

Results

Comparison of short-term efficacy between the two groups

There was no statistically significant difference in short-term efficacy between the two groups (P>0.05), as shown in **TABLE 1**.

Comparison of quality of life in patients between the two groups

In comparison of the quality of life in patients between the two groups, it was indicated that the excellence rate was 58.14% in the observation group and 30.23% in the control group with the former significantly higher than the latter of statistically significant difference in between (P<0.05), as shown in **TABLE 2**.

Comparison of the incidence of adverse reactions between the two groups

After the treatment, in the observation group there were 2 cases of excessive sweating, 1 flushed face and 2 gastrointestinal events with the complication rate of 11.63%; while in the control group there were 4 cases of excessive

sweating, 2 flushed face, 3 endometrial hyperplasia and 4 gastrointestinal events with the complication rate of 30.23%. It turned out that the incidence of complications in the observation group was significantly lower than that in the control group with the difference of statistical value (P<0.05), as shown in **TABLE 3**.

Discussion

Breast cancer is a common malignant tumor in breast surgery and its pathogenesis is not very clear. According to clinical findings it is mainly associated with several factors. Firstly the patients with family medical history of breast cancer are usually more likely to suffer from the disease than other people, especially for women with a breast cancer history in their first-degree relatives; secondly, the patients who subject to such reproductive factors as late menopause, short menstrual cycle, late level during the first full-term pregnancy and small age at menarche are more likely to have breast cancer; thirdly, the incidence of breast cancer is highly associated with estrogen; finally, it can also be affected by dietary habits and nutrition intake. According to relevant data, it is showed that if the patients excessively consumed high calorie foods in the juvenile period, it would promote rapid growth of the cancer and make menstruation arrive prematurely. In middle aged, they would gain weight, thereby increasing the incidence rate of breast cancer [6-8].

Surgery is the neoadjuvant chemotherapy for breast cancer in patients and it has good curative effect on the treatment of patients with locally advanced breast cancer. Also it has been confirmed by clinical trials that this method can effectively alleviate the disease and help with the judgment as well as prognosis of the adjuvant therapy for breast cancer. It is of much clinical value as well to adopt monitoring method of biological factor expression level [9]. For a part of advanced patients with recurrence and metastasis of breast cancer, the opportunity of surgery has already been lost in clinical treatment. Moreover, there may be the possibility of potential metastasis of cancer cells in many patients, and the effect of the treatment by chemical methods is not very ideal in this regard. So it is extremely challenging for oncologists to manege to correctly choose chemotherapeutic agent in treatment of patients with breast cancer [10]. Clinical research shows that in patients with advanced breast cancer, the implementation of chemotherapy followed by the drug treatment of paclitaxel combined with epirubicin, can increase the treatment

Table 1. Comparison of short-term efficacy between the two groups [n (%)]

Group	Case	CR	PR	NC	PD	Efficiency rate(%)
Observation group	43	8 (18.60)	18 (41.86)	11 (25.58)	6 (13.95)	26 (60.47)
Control group	43	6 (13.95)	16 (37.21)	10 (23.26)	11 (25.58)	22 (41.16)
X^2	-	0.341	0.195	0.063	1.833	0.754
P	-	0.559	0.659	0.802	0.176	0.385

Table 2. Comparison of quality of life in patients between the two groups [n (%)]

Group	Case	Excellent	Stable	Decreased
Observation group	43	25 (58.14)	15 (34.88)	3 (6.98)
Control group	43	13 (30.23)	7 (16.28)	23 (53.49)
X^2	-	6.789	3.909	22.051
P	-	0.009	0.048	0.000

Table 3. Comparison of the incidence of adverse reactions between the two groups [n (%)]

Group	Excessive sweating	Flushed face	Endometrial hyperplasia	Gastrointestinal events	Complication rate(%)
Observation group(n=43)	2 (4.65)	1 (2.33)	0 (0.00)	2 (4.65)	5 (11.63)
Control group (n=43)	4 (9.30)	2 (4.65)	3 (6.98)	4 (9.30)	13 (30.23)
X^2	0.717	0.345	3.108	0.717	4.497
P	0.397	0.557	0.078	0.397	0.034

efficiency in a certain extent and improve the patients' survival rate but also with some shortcomings. The functioning range of these drugs is very extensive and will cause great damages to other normal cells in the patients' body while killing tumor cells. It turns out to be of obvious negative effect and needs to use other methods of supporting therapy, in order to reduce the incidence of adverse reactions, improve the quality of life of [10,11].

Perilla Oil, called the purple Perilla Seed Oil, is made from the mature seeds of Perilla frutesccns and is a kind of natural oil of high saturation with alpha - linolenic acid as the main component. It has the effect of anti-aging, controlling platelet aggregation, removing cholesterol in the body, enhancing human memory and resisting to allergy as well as tumor. It can effectively reduce the activity of ornithine decarboxylase in colonic omentum and inhibit the incidence of breast cancer caused by chemical carcinogen SMBA [12] with moderately good effects in clinical trials. Related studies have shown that perilla oil has a certain effect on cancer treatment mainly because it can effectively inhibit the proliferation of breast cancer cell MCF7. In detection of MTT, the MCF7 cell activity of breast cancer patients treated with perilla oil was detected respectively at 24 h and 48 h after the treatment and the result showed that there was obvious inhibition of the cell and that the larger the drug concentration, the more obvious the inhibitory effect on the activity and proliferation of breast cancer cell MCF7 [13,14]. This researching finding provides targets for future treatment of breast cancer. It requires to not only study the mechanism of perilla oil in inducing cell apoptosis, but also extract from perilla oil the effective composition which can inhibit the proliferation and induce apoptosis of tumor cells. Although this extraction work is tremendous, it is very important for treatment of breast cancer. If it is possible to extract one or more such effective composition in clinical trials, it will play a very important role in the treatment of breast cancer disease [15]. In this study, we selected a total of 86 breast cancer patients enrolled in our hospital from February 2015 to March 2016 as the objects and divided them into control group as well as observation group to analyze the effect of perilla oil on breast cancer. The results show that in the group treated by perilla oil, the adverse reaction rate was obviously lower and the quality of life was significantly higher in patients ($P < 0.05$), with no significant differences in short term therapeutic effects between the two groups ($P > 0.05$). It can be seen that perilla oil can effectively improve the quality of life and reduce the incidence of adverse reactions in patients, which is consistent with clinical findings.

To sum up, in breast cancer patients, the treatment of perilla oil plus paclitaxel combined with epirubicin has more obvious effect and enables to decrease adverse reaction rate in patients, thus worth popularizing in clinical practices.

References

1. Fei G, Yingsuo Z, Cailian R. Clinical effect of perilla oil on breast cancer. *J. Jiujiang. Uni.* 30(2), 79-80 (2015).
2. Anjum F, Razvi N, Maqbool A *et al.* A review of breast cancer risk factors. *Univ. J. Pharm. Res.* 2(5), 40-45 (2017).
3. Huiping L, Yajuan Y, Dan S *et al.* The mediating role of coping modes between illness perception and posttraumatic growth among pa-tients with breast cancer. *Chinese. J. Behav. Med. Brain. Sci.* 25(8), 698-702 (2016).
4. Yeun KK, Soo KD. Recent Advances in Kawasaki Disease. *Yonsei. Med. J.* 57(1), 15-21 (2016).
5. Hivert MF, Perng W, Watkins SM *et al.* Metabolomics in the developmental origins of obesity and its cardiometabolic consequences. *J. Dev. Origin. Health. Dis.* 6(2), 65-78 (2015).
6. Ruliang W, Zefei J. Some hot issues on treatment for bone metastases of breast cancer: interpretation of expert consensus on clinical diagnosis and treatment of bone metastasis and bone related diseases in breast cancer. *Cancer. Res. Clinic.* 27(10), 707-710 (2015).
7. Perzel S, Huebner H, Rascher W *et al.* Searching the web: a survey on the quality of advice on postnatal sequelae of intrauterine growth restriction and the implication of developmental origins of health and disease. *J. Dev. Origin. Health. Dis.* 1 (2017).
8. O'Donnell KJ, Meaney MJ. Fetal Origins of Mental Health: The Developmental Origins of Health and Disease Hypothesis. *Am. J. Psych.* 174(4), 319 (2016).
9. Horton DM, Saint DA, Owens JA *et al.* Spontaneous intrauterine growth restriction due to increased litter size in the guinea pig programmes postnatal growth, appetite and adult body composition. *J. Dev. Origin. Health. Dis.* 7(5), 548-562 (2016).
10. Gonzalez-Bulnes A, Astiz S, Ovilo C *et al.* Developmental Origins of Health and Disease in swine: implications for animal production and biomedical research. *Theriogenology.* 86(1), 110 (2016).
11. Rosenfeld CS. Homage to the 'H' in developmental origins of health and disease. *J. Dev. Origin. Health. Dis.* 8, 1-22 (2017).
12. Ma Chunhua, Zhang Lijuan, Yan Jun *et al.* Revision of Chinese version of modified disease perception

questionnaire and its validity and reliability in breast cancer patients. *Chinese. Gen. Prac.* 2015(27): 3328-3334.

13. Freije W A, Thamotharan S, Lee R *et al*. The hepatic transcriptome of young suckling and aging intrauterine growth restricted male rats. *J. Cell. Biochem.* 116(4), 566-579 (2015).
14. Koopman J. Integrating the bright and dark sides of ocb: A daily investigation of the benefits and costs of helping others. *Acad. Manag. J.* 59(2), 414-435 (2016).
15. Sangmi H, Hyeon SG, Yeun KK *et al*. Epidemiologic study on Kawasaki disease in Korea 2007-2014 based on health insurance review & assessment service claims. *J. Korean. Med. Sci.* 31(9), 1445-1449 (2016).