Case Study

The Nursing Experience of Caring a Patient With Metastatic Brain Tumor in Surgical Pain Management Ward: a Case Study Report

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**Abstract**

Brain metastases are related to the poor prognosis of patients. It is not clear why certain cancers are more likely to metastasize to the brain than others. Lung cancer, breast cancer and melanoma noted as the highest incidence of brain tumor metastasis. The purpose of this report was to describe the nursing care of a patient with malignant tumor on the left breast who received multiple chemotherapy and radiotherapy, targeted therapy and mastectomy, and the tumor metastasized to the right occipital lobe of the skull. This study was conducted in surgical pain management ward within 3 days observation. Gordon's eleven health function types' assessment framework was used. Observations, physical assessments, interviews, medical records were attempted to collect physical, psychological, social and spiritual data. Two specific nursing problems were found. Special attention need to be paid for the pain situation and take individualized nursing measures by evaluating individual patients.

**INTRODUCTION**

Regardless of the primary or metastatic lesions, brain metastases are related to the poor prognosis of patients. The one-year survival rate of patients with symptomatic brain metastases is less than 20%. It is not clear why certain cancers are more likely to metastasize to the brain than others. But lung cancer, breast cancer and melanoma have a higher incidence of brain tumor metastasis. Among all malignant tumors, breast cancer ranks second in the incidence of metastatic cancer. The overall prognosis of breast cancer brain metastasis is poor, and the untreated survival period is only 2 to 27 months. For cases of simple brain metastasis, although surgical resection may be restricted by anatomical location, neurosurgical resection can help reduce the mass effect in symptomatic patients and is still the primary treatment option.

This article describes the nursing experience of a patient with malignant tumor on the left breast who received multiple chemotherapy and radiotherapy, targeted therapy and mastectomy, and the tumor metastasized to the right occipital lobe of the skull. The patient’s emotional fluctuations, doubts, and refusal to care for treatment due to tumor metastasis pain, postoperative wound pain, and catheter indwelling factors have triggered the author’s motivation, hoping to help the case to establish correct pain management.
cognition through the team care experience. It can effectively alleviate the discomfort of patients after surgery to improve the comfort of patients, and serve as the care experience and sharing of similar cases in the future.

**Treatment and care of metastatic brain cancer from breast cancer**

Breast cancer is the second most common source of metastatic brain cancer, accounting for about 14-20%. The typical metastasis of breast cancer is mostly in the lung, liver or bone. And metastatic brain cancer usually does not appear until two to three years after breast cancer is diagnosed.4 There are several risk factors for metastatic brain cancer in breast cancer patients: aggressive tumor behavior, negative hormone receptor status, young women, C-ERBB-2 excessive performance, and lung or liver metastases. Compared with other tumors, metastatic brain cancers mostly die from systemic diseases, and patients with breast cancer complicated with metastatic brain cancers mostly die from neurological diseases. Therefore, local control of metastatic brain tumors is very important for long-term survival.5

Treatment: Chemotherapy is not effective for brain lesions, because most drugs. Neither can enter the brain, so you must rely on surgery or radiation therapy. If you receive brain radiation therapy, it can increase your survival time by 3 to 6 months on average. If there is brain metastasis, consider radiotherapy. If there is edema or compression at the metastatic site and cause headache, you must use antihypertensive drugs and steroids at the beginning of radiotherapy to effectively reduce the symptoms.6 Because there are few systemic therapies that can penetrate the blood-brain barrier (BBB), the overall prognosis of brain metastases from breast cancer is poor. The most common symptoms of patients include headache (35%), vomiting (26%), nausea (23%), and hemiplegia (22%), vision changes (13%) and seizures (12%). Most patients have multiple metastases (54.2%). The cerebellum and frontal lobe are the most common sites of metastasis (33% and 16%, respectively). The treatment of most patients usually adopts the following two or more multimodal methods: whole brain radiotherapy (52%), chemotherapy (51%), stereotactic radiosurgery (20%), surgical resection (14%). To reduce tumor angiogenesis or change blood permeability brain screen; factors affecting prognosis include tumor size and size, multiple metastases and extracranial metastases.3

**Pain Care**

Pain is a subjective and self-conscious symptom that not only stems from existing or potential physical or physiological factors, but also involves the direct or indirect influence of human life experience.7 Pain after craniotomy may affect hospital stay, medication costs, quality of life and the development of persistent pain.8 Although there have been considerable developments in drugs for postoperative sedation of pain, many drugs (Morphine, etc.) have the effect of inhibiting respiration and anesthesia, resulting in not widely used in patients after neurosurgery. Codeine has become a more accepted treatment option in recent years.9

Pain care can be classified as cognitive behavioral or physical therapy measures through non-pharmacological pain relief measures. The goal of cognitive behavioral measures is to change the patient's perception of pain, change the behavior of pain, and provide patients with greater control over pain. The goal of physical therapy measures is to provide comfort, adjust to physical dysfunctions, physiological responses, and reduce the fear of pain-related movement or activity restrictions.10

Patients with full-period surgery suitable for non-pharmacological treatment include: the patient has clear anxiety or fear, but the
anxiety is caused by a feeling of weakness caused by medical treatment or special treatment, and conditions that are good for avoiding or reducing drugs, such as: A history of adverse effects, physiological responses to avoid excessive sedation, conditions that may experience and need to cope with prolonged pain after surgery, and incomplete pain relief with medical measures.11

Cognitive behavioral measures include: pre-operative teaching information preparation, simple relaxation, meditation (imagery), hypnosis (hypnosis), biological feedback (biofeedback), etc. Teach patients how to relieve their physical discomfort during activities. When fear or anxiety is present, it is important to evaluate psychological coping skills and provide pain management and maintain a positive view.12 When the patient is anxious or afraid before the operation, cognitive behavioral strategies can be provided to assist the patient in choosing measures and teaching how to use it, such as simple relaxation techniques or meditation. For some patients, especially those with high anxiety, too much information or too many requests for decision making can worsen anxiety and fear. Therefore, the psychological evaluation of the patient is very important, including the patient’s obvious disability or confusion anxiety symptoms, such as emotional instability, restlessness, inability to fall asleep, slow thinking, etc.

Relaxation techniques

Preparatory actions:

Deep inhale/tension; exhale/relax; yawn for quick relaxation.
1. Clench your fists; take a deep breath; pause for a few seconds.
2. Exhale slowly, as soft as a doll.
Start action:
1. Take a deep breath slowly.
2. When you exhale slowly, you feel that you start to relax. Imagine the tension leaving the body with the exhale.
3. Now inhale and exhale slowly and regularly, at the speed you feel most comfortable, try abdominal breathing.
4. Concentrate on slow and regular inhalation and exhalation movements. When you breathe in, you say silently in your heart: "Inhale, 2, 3"; when you exhale, you say silently in your heart: "Exhale, 2, 3". I muttered in my heart: I am now "calm" or "relaxed".
5. Imagine yourself relaxing in a certain place, for example; you are lying on the beach and sunbathing, feeling very calm and relaxing.
6. Do steps 1 to 4 once or repeat steps 3 and 4 for 20 minutes.
7. Finally, take a slow and deep breath, and tell yourself when you exhale, "I feel relaxed."

Family support or tapes can also keep the patient’s technique going. Relaxation strategies can also use informal music to distract. In order to significantly reduce the pain after surgery, you can choose the music that the patient likes or relaxing music. After the operation, listen to the music selected by the patient for 30-60 minutes, provide the patient with a relaxed posture, and provide the patient with earphones to listen with their eyes closed. The environment should minimize stimulation.

Physiotherapy measures

In addition to cognitive behavioral measures, there are several physical
therapy methods that can be used as pain management. Common items include: cold or hot application, massage and acupoint stimulation. The main function of these physical therapy methods is to achieve pain relief through external stimulation.

Therapeutic Massage can also relieve pain. The main benefit of this treatment is to stimulate the autonomic nerves and affect the physical, psychological and emotional levels through therapeutic contact. While relieving stress and pain intensity, it can also relieve long-term stress, anxiety and physical pain and discomfort. Scholars such as Nixon proposed that therapeutic massage can relieve pain in the following ways: (1) Massage soft tissues to promote blood circulation and remove pain-causing agents such as lactic acid and inflammatory substances; (2) Massage to stimulate secretion Inhibit large nerve fiber nerve impulse conduction material; (3) Stimulate endogenous analgesic morphine (Endorphin) and activate midbrain, brain stem and spinal cord neurons, so that the spinal cord releases Enkephalin to produce pain inhibition; (4) It can be induced by contact massage Feeling of comfort and tranquility.

Therapeutic massage

1. For 20 to 45 minutes each time, the massage site can be "neck, face, neck, arms, legs, feet or back" and other parts of the body that have pain.
2. The massage environment must be quiet. Pay attention to the privacy of the patient when the massaged area is exposed; use low-sensitivity massage lotion or massage oil; avoid the tumor site, the surgical site, the surrounding invasive catheter or the radiotherapy site and other areas massage.

Massage techniques and methods: The depth of deep massage is about 4-6 inches or the pressure is 0.0090 kg/cm². (1) The purpose of effleureage is the starting action of the whole therapeutic massage procedure. Use one hand or both palms to push on the patient's skin in all directions. When using both palms, both hands can be pushed synchronously or alternately. (2) The rubbing method (friction) is to press the ulnar side of the finger or palm against the skin, sliding the skin and the subcutaneous tissue, the sliding direction is perpendicular to the direction of the muscle fiber, and its purpose is to act on the skin and subcutaneous. Between the tissues, loosen the sticky scar tissue. (3) Kneading works on deep tissues, especially muscles, and helps muscles to produce extension effects through the pushing effect. Nursing staff must put their hands close to the skin and push them in a circle to produce alternate squeezing and relaxation effects between the subcutaneous tissues and deep muscles; they can use both hands or one hand, the entire palm or fingertips. When drawing a circle, Squeeze with a heavier force in the direction of the center, and then release some pressure to return to the original point. During this process, the nurse's hands must be close to the skin, not sliding, and then gently slide to the next adjacent massage site. (4) Pressing: Applying a little heavier pressure than strokes to smoothly press on the patient's skin, so that the skin, subcutaneous tissue and deep muscles are pushed and twisted. (5) Stroking: applying heavier pressure and alternately tapping the skin at a slightly faster speed to produce a stimulating effect, which is different from the previous two methods for relaxation; in each course of treatment, the entire area to be massaged can only be used for one tapping method, and the tapping method cannot be used repeatedly at the same fixed point to avoid excessive stimulation.

METHODS

This case uses Gordon’s eleven health function types as the assessment framework. The nursing period is from April 1 to April 3, 2019. Use observations, physical assessments, interviews, medical records, etc. to collect physical.
psychological, social and spiritual related data of the case, and organize and analyze it.

RESULTS

Basic information of the case participants

Ms. H, a 42-year-old female, graduated from high school. She works as a housekeeper. She speaks Mandarin and Taiwanese. She lives with her husband, son and daughter. The main caregiver is her husband. The family tree is shown in the picture. No history of food allergy to special drugs.

Past medical history

Since the second child was born in 2013, the patient felt pain and discomfort in the left breast while breastfeeding. He was diagnosed with breast cancer in June 2014. Completed chemotherapy (2015-2017), mastectomy (2014), and breast reconstruction surgery (2014).

Medical treatment

The patient had symptoms of headache and vomiting since the beginning of March 2019, and underwent brain CT: occipital brain tumors have been tracked in the outpatient clinic one after another. He was admitted to the hospital on 3/31, 4/1 underwent tumor resection and was admitted to the intensive care unit for observation, and 4/3 was transferred to the general ward for continued treatment.

Nursing assessment

1. Health awareness and health management style
   The patient was diagnosed with breast cancer in 2014, and has been followed up and treated many times in this hospital. Since the case was diagnosed in 2014, the case has paid considerable attention to their own health, regularly self-examined their breasts, and started regular exercises, using a treadmill for about 30 minutes a day. Due to multiple hospitalizations for chemotherapy and radiotherapy, I am no stranger to the hospitalization process. This time I mainly hope that the headaches that have occurred since March can be improved after the operation. This assesses the patient’s painful nursing problems.

2. Nutrition and metabolic patterns
   The case was 164 cm tall, weighed 54 kg, and had a body mass index (BMI) of 20.08 kg/㎡; he had regular exercise habits; he had repeated headaches and nausea since the beginning of March, and his diet was reduced and lighter. Assess the case with complete oral mucosa, red skin, warm limbs, no edema, jaundice, and pulse 2+. 4/01 After the operation, food can be taken by mouth, and there is no eating, swallowing disorder or coughing. Use N/C 3L/min, breath frequency: 15-21 times/min, blood oxygen concentration: 99-100%, normal breath sounds, smooth breathing and no effort, can spontaneously cough a small amount of sputum. Blood draw: Na: 139 mg/dl, K: 3.2mg/dl, iCa: 4.2mg/dl. Therefore, it is estimated that the patient has no special care problems with this system.

3. Excretion type
   The case can urinate on its own about 6-8 times a day, without frequent urination and urination discomfort, and normal stools can be relieved daily, without the need for drug assistance. During the nursing period, the color of urine is clear and there is no sediment, and there is no abnormal secretion and peculiar smell at the urethra. Therefore, it is estimated that the patient has no special care problems with this system.

4. Types of activities and sports
   The patient’s occupation is a housekeeper. After the diagnosis of breast cancer in 2014, he began regular...
exercise and used a treadmill for about 30 minutes a day. During the care, the patient has a clear consciousness, all limbs have 5 points of muscle strength, and can move according to the instructions. When the surgery was just performed on 4/01, due to postoperative wounds and duct pain, the patient did not want to move, did not want to eat, and was not willing to cooperate with turning over. It is conventional treatment such as urinary catheter care, and during the treatment activities, there will be shallow breathing, tight muscles throughout the body, and a painful expression on the face for a few minutes until the pain is relieved; the class chief complained that "the place behind the head is so painful" and "the tube". When can I pull it out, it hurts." “I knew that the operation would be so painful. I would not have it. It turns out that the head surgery is more painful than the chest cut before me.” In addition, the patient constantly fiddled with the upper tube due to the feeling of a foreign body; After the transfer on 4/01, there were multiple headaches, nausea, and retching, and the patient’s posture changed slightly, that is, severe nausea, a small amount of saliva, and reduced physical activities such as turning over. The patient was evaluated as having acute pain nursing problems.

5. Sleep and rest patterns
The patient usually falls asleep at about 10 to 11 at night, and sleeps for about 6-7 hours a day. There is no need to take medicine or sleep interruption. The main complaint of the patient: "I will wake up painful when I go to bed at night. I only slept for an hour. I have intermittent sleep and awakening." The pain was scored 8-9 by the Numerical Rating Scale (NRS). Because of the pain of the wound and the position of the pipeline, the patient stays asleep for less than an hour at night. This assesses the patient’s acute pain care problem.

6. Cognitive and feeling patterns:
The language used in the case is Chinese and Hokkien, conscious, pupil reflex, both eyes are 2.0-3.0mm, pupil reflex, behavioral cognitive assessment: judgment, orientation, memory, abstract thinking ability, calculation ability, and hearing. After the operation, the patient complained of continuous tingling at the position behind the occipital surgery. The pain score was about 8-9. Moving or turning over would promote the increase in pain score, resulting in the patient’s refusal to turn over, urinary tube care, and unwillingness to eat. Pain can be relieved slightly after being stationary or applying analgesics. Each time the pain lasts for about 10-20 minutes. I often ask whether I can apply analgesics. Codeine 30mg IV is administered every 4 hours. When visiting family members, they said that the patient usually has a good tolerance for pain, and he rarely complained of pain during the previous hospitalization. This assesses the patient’s acute pain care problem.

7. Self-feeling and self-cognition patterns:
The patient said that he had a good tolerance for pain, and he had undergone mastectomy and reconstructive surgery. Only 1-2 times of painkillers were given. Therefore, it is estimated that the patient has no special care problems with this system.

8. Roles and relationship types:
In the case, the wife, mother (housekeeper) and daughter-in-law lived with her husband, son, and daughter. Because both children are still young (primary one and kindergarten), the focus of daily life is on the children; during the care, the patient is worried. Children who have been hospitalized for too long are worried, but relatively they don’t want to let the children know too much. Usually, the decision maker at home is
the husband, and the couple get along well. The operation is also decided after discussion with the husband. There is no major conflict of opinion during the process, so it is estimated that the patient has no special care problems in this system.

9. Sex and reproduction patterns:
Both children of the case were delivered by caesarean section, and the husband had a harmonious sex life. There was no abnormal appearance of the reproductive organs, and no abnormal secretions and odors in the vagina. Therefore, it is estimated that the patient has no special care problems with this system.

10. Response and stress tolerance type
When faced with pressure or physical discomfort, exercise and listen to music will relieve stress. During the hospitalization period, the husband of the patient received frequent visits, informed the patient of the current situation of the child in the home, so that the patient was relieved, and followed the guidance of the nurse to give the patient a therapeutic massage and bring a music player to the patient. Therefore, it is estimated that the patient has no special care problems with this system.

11. Value and belief pattern:
The case has no specific beliefs, and the family is Taoist. The mother-in-law will put the peace symbol next to the bed, hoping to bless peace. Therefore, it is estimated that the patient has no special care problems with this system.

The nursing problems

Based on the evaluation and collection of the above-mentioned case data, it is established that the patient two specific nursing problems during this admission such as acute pain/postoperative wounds and pipelines; and impaired skin integrity/wound. The acute pain is the most troubled nursing problem experienced by patient. The main causes of common pain in patients undergoing craniotomy are: increased intracranial pressure, wound pain, indwelling tubing, etc. Since the patient does not have an intracranial pressure monitor, it can be observed from vital signs and patient symptoms that the patient has no increased intracranial pressure. Signs: changes in consciousness, restlessness, blurred vision, unequal pupils in both eyes, slower heartbeat and breathing, and increased blood pressure. It can be inferred that the patient's pain is mainly due to postoperative wounds and ducts. Here, the focus of care can be focused on this nursing problem:

Main nursing problems: Acute pain/postoperative wounds and pipelines (care date: 4/01-4/03)

Subjective and objective data
S1 4/1 "My head hurts, can I take painkillers?"
S2 4/1 "Why did it hurt so much there after I had the operation (the area where the fingers were operated on the pillow)"
S3 4/1 "I had known that the operation would be so painful, I would not do it. It turns out that the operation on the head is more painful than the chest operation before."
S4 4/1 "When I move, I feel a tingling sensation on the back of the head. I feel pain for 8-9 minutes. I have to stop moving or take painkillers each time to relieve slowly. Each time the pain lasts for about 10 minutes."
S5 4/1 "I don't want to move or wash the urinary tube, I don't want to move now, don't disturb me"
"I don't want to eat now; can I talk about it tomorrow?"

"I think today's pain is probably 7-8 points, but when the painkillers are used up, it will come down to 3-4 points."

"I woke up with pain last night. I only slept for an hour. I would wake up intermittently in the middle."

"How long will these tubes (CVC, ICP, H/V) be left? I always feel uncomfortable with something on my head."

"When I was in treatment, hospitalized, or uncomfortable, I would listen to crystal music, then close my eyes and meditate."

After the operation, the patient continued to frown and did not want to speak.

The patient refuses to turn over, urinary tube care, and appears unwilling to eat.

When performing therapeutic activities, there will be rapid shallow breathing, tight muscles throughout the body, and painful expressions until the end of the activity.

Pain Assessment PQRST: Position: Behind Occipital, Quality: Tingling, Reaction: Move to promote pain/immobility or use analgesics to relieve pain, Severity: 8 points, Timing: for 10-20 minutes.

Because the patient was informed of postoperative pain before the operation, I had discussed with the patient and family members about the use of painkillers at their own expense after the operation. The patient also complained of pain in the recovery room after the operation. Use now.

The painkiller will be given every 4 hours.

Poor eating situation on the day: the small night shift and the large night shift only drank 130ml of water 2 times and did not eat anything.

-night shift sleeps and wakes up, every time you sleep for less than 1 hour, you will wake up.

-day shift patients often fiddle with the pipeline on their own and are afraid to move their bodies.

Assist the patient to change the lying position. The patient will have deep breathing, physical exertion and frowning.

Patient vital signs: body temperature 35.6-36.7°C, Heartbeat: 67-105 beats/min, breathing 20-25 beats/min, blood pressure 110-144/50-69mmHg, SPO2: 99-100%

1. Controlled pain score within 24 hours, the Numerical Evaluation Scale for Pain (NRS)
dropped to 4 points.

2. The pain of the patient before transfer can be relieved: (1) the patient can use 2 non-drug measures correctly, (2) the frequency of using analgesics can be reduced from 6 times a day to less than 2 times.

Nursing Evaluation

1-1. Introduce yourself to the patient and establish a good trust and care relationship with the patient.
1-2. Evaluate the patient’s pain score every 2 hours, and re-evaluate each time 30-60 minutes after using analgesics.
1-3. Collect Chinese nursing care to reduce interference and interrupt the patient’s rest time, and communicate with the patient for a good time before treatment, so that the patient is psychologically prepared, so that the patient can smoothly cooperate with the treatment.
1-4. Assist the patient to adopt a comfortable lying position and adjust the position of the pipeline so as not to interfere with the patient's resting position.
1-5. Provide patient tubing and wound location to help increase pain tolerance.

2-1 Teach patients muscle relaxation techniques:
1. Clench your fists; take a deep breath; pause for a few seconds.
2. Exhale slowly.
3. Take a deep breath slowly.

4. When exhaling slowly, I feel that I begin to relax, imagine being nervous, and the pain leaves the body with exhalation.
5. Slowly and regularly inhale and exhale to feel most comfortable.
6. Concentrate on slow and regular inhalation and exhalation movements.
7. Imagine yourself relaxing in a certain place.
8. Do steps 1 to 4 once or repeat steps 3 and 4. Maintain for about 20 minutes.

2-2 Teaching family members and assisting patients with massage:
1. There is pain in "neck, arm, back" etc. for 20 to 45 minutes each time.
2. Use low-sensitivity massage lotion or massage oil; avoid swelling.
3. Massage techniques and methods: The depth of deep massage is about 4-6 inches or
   The pressure is 0.0090 kg/cm². (1) Pushing method
   It is the starting action (2) of the therapeutic massage procedure to slide by rubbing.
   The direction is perpendicular to the direction of the muscle fiber to make it sticky scar group.
Weaving loosened. (4) Pressure method: apply one more weight than the stroke method. A little bit of pressure, steadily press on the patient's skin, making the skin, subcutaneous tissue and deep muscles are pushed. (5) Percussion method: slightly faster ground speed alternately hits the skin to produce irritation to the patient and discomfort. Therefore, it is not implemented.

2. Assess the patient's past experience in relieving pressure and pain. The medication measures are listening to music (crystal music), please bring home Music player used. 1. Within 24 hours, the patient indicated that the pain was relieved, and the NRS assessment can be reduced to 2-3 points, and 0-1 points when immobile. And the patient can cooperate with the nurse for treatment, and there is no rejection or discomfort during the process. In addition, the patient's appetite improved and he was willing to eat a small amount of soft food without nausea and vomiting during the process.

2. On 4/2, see the family members to help the patient with therapeutic massage. Family members help patients. It is equipped with a music player; and it can be seen that the patient uses it when relaxing.

3. Shows that the patient actively uses muscle relaxation techniques when painful and uncomfortable. Coincidentally, supplemented by music.

4. 4/3 of the patients only received intravenous painkillers once with the case to establish a trusting relationship between the patient and the patient to assess the patient's awareness of the current disease and understand the patient's past pain experience. After intervention with medications and other medical measures, teach the patient to understand. After alleviating and enhancing the factors of one's own pain, aim and improve, and learn relaxation techniques, supplemented by non-drug nursing measures, to further improve the pain relief of patients.

CONCLUSION

The biggest benefit of this care is that through the care of this case, it is understood that in the care of patients after surgery, not only drugs can relieve and...
improve the comfort of patients, but there are also many non-pharmaceutical measures for us to use, the most important. The point is to understand the different characteristics of each patient to give individualized care.

The symptoms and probability of recurrence and metastasis of breast cancer patients cannot be assessed. Whether it is eradicated or not after the operation, follow-up is the limitation of the case care in this article. Follow-up can only be carried out through the cancer manager; however, it is recommended that such patients should be cared for in the future. Pay attention to the pain situation and take individualized nursing measures by evaluating individual patients.

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CONFLICTS OF INTEREST

The author disclosures no potential conflicts of interest, financial or otherwise.

REFERENCES


