Radiation therapy combined with hyperthermia and chemotherapy for the treatment of orbital metastesis in breast Cancer : a case report.

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Abstract

A case report of breast cancer patient who suffered from exopthalmos with severe pain of right eye due to metastasis to the right orbit. The disease extended to frontotemporal part of scalp with intracranial extension to frontal part of brain parenchyma. The local treatment was external irrediation to right eyes included frontotemporal region of the scalp and intracranial lesion. Three hyperthemic treatments were combined because the tumor showed no response at the dose of 3600 cGy. After the completion of irradiation conjuncted with hyperthermia, the tumor showed partial response to the treatment. The further treatment was hyperthermia combined with chemotherapy (CAF regimen) once a month for three months. The result was very good. Exophthalmos disappeared and pain symptom was relieved without any severe complications.

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การใช้รังสีรักษาร่วมกับการรักษาด้วยความร้อนและเคมีบำบัดในผู้ป่วยมะเร็งของเต้านมที่แพร่กระจายมายังตา : รายงานผู้ป่วย

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บทคัดย่อ

รายงานผู้ป่วยมะเร็งเต้านม 1 ราย ที่พบการกระจายของโรคไปที่เบ้าตาขวาและขมับร่วมกับการลุกลามเข้าในเนื้อสมอง มีอาการปวดและลูกตาถลนออกมานอกเบ้าตา ได้ให้การรักษาด้วยการฉายรังสีอย่างเดียว เมื่อให้ปริมาณรังสี 3600 เซนติเกรย์ พบว่าก้อนเนื้องอกไม่แสดงการตอบสนอง จึงได้เสริมการให้ความร้อนสัปดาห์ละครั้งร่วมกับการรักษาด้วยรังสี เมื่อสิ้นสุดการรักษาด้วยรังสี 6500 เซนติเกรย์ใน 6 สัปดาห์ ครึ่งร่วมกับการรักษาด้วยความร้อน 3 ครั้ง ก้อนมะเร็งมีขนาดลดลงมากกว่าร้อยละ 50 จึงให้การรักษาต่อด้วยยาเคมีบำบัดร่วมกับความร้อน เดือนละครั้ง เป็นเวลา 3 เดือน ก้อนเนื้องอกแสดงการตอบสนองมากกว่าร้อยละ 80 ทั้งที่ตำแหน่งขมับ ลูกตาที่โปน และที่มีการลุกลามเข้าในเนื้อสมอง อาการปวดหายไป โดยไม่พบภาวะแทรกซ้อนที่รุนแรง

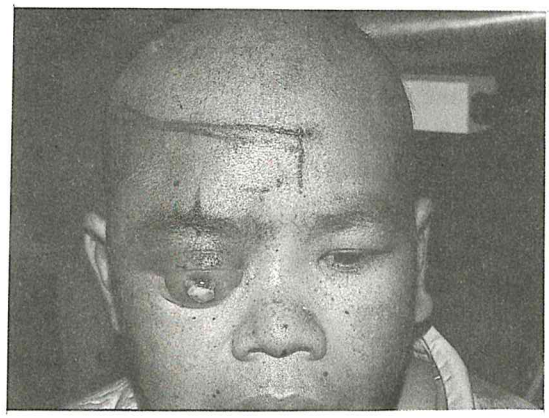
สาขาวิชารังสีรักษา ภาควิชารังสีวิทยา
คณะแพทยศาสตร์ศิริราชพยาบาล มหาวิทยาลัยมหิดล

Breast cancer is the disease with high incidence of distant metastases. Vascular space invasion by tumor and hematogenous metastases may be observed even with small tumor.[1] Bone, brain, lung and liver are the most common site of metastases.[2] With the expanded use of chemotherapy in recent years, there has been a rising frequency of sites that were formerly less common.[2] Orbital metastasis is not uncommon and the most common cause of metastases to the orbit is breast cancer.[2-4] The sites of metastasis are choroid, retrobulbar soft tissue, eyelid, or bony orbit.[5-8] Clinical symptoms of ocular metastasis are exophthalmos, pain, ophthalmoplegia and diplopia, palpable mass, proptosis, periorbital swelling, and pseudoinflammation.[4,5,7] Orbital metastasis appeared to be unilateral and accompanied with aggressive adjacent bony destruction and intracranial lesion ; direct extension or seperate metastasis, which could be seen in CT scan.[8-9]

Survival of single orbital metastasis is much better than metastasis to multiple sites.[10] Local treatment by radiotherapy for palliative treatment in single orbital metastasis could provide the fair result. The complete response were 25-50%, while the overall response rate was as high as 85%.[11-16] In case of large tumor, single modality of treatment could not be able to combat the disease. Multimodalities of treatment such as radiation therapy, hyperthermia and chemotherapy might be effective in such cases.

Case report

A known case of Stage 1 breast cancer patient (T1, NO, MO) who had modified radical mastectomy 4 years ago. Two and a half year after mastectomy, chest wall recurrence developed and radiation therapy with 6 courses of chemotherapy were then given. She developed painful exophthalmos with visual impairment of the right eye and swelling of right temporal area for months. The CT scan revealed ill defined mass at superolateral aspect of right orbit forming extraconal mass with exophthalmos and bony destruction of surrounding bone. The mass extended laterally into the right frontotemporal part of scalp and also intracranially to the right frontal lobe. (Fig 1)



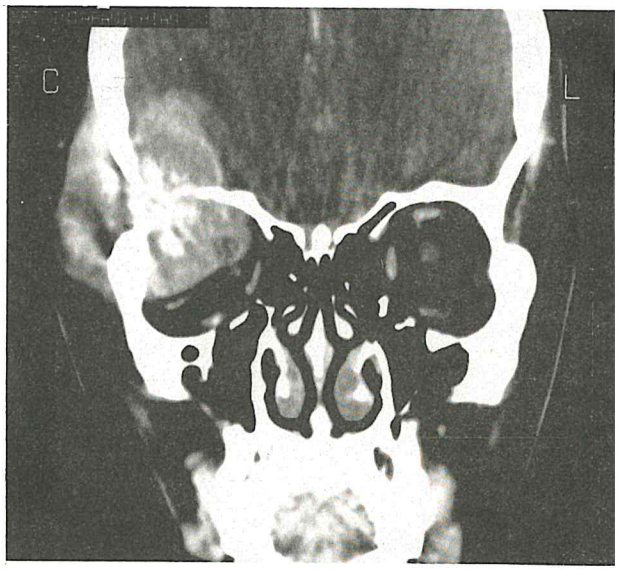


Fig 1 : *Photograph and CT scan before treatment*

The treatment started with irradiation with Co-60 by wedge technique via anterior and right lateral field,200 cGy/fraction, 5 fractions a week, with total tumor dose of 6600 cGy in 6 and a half weeks. At 3600 cGy, because the tumor showed poor response to radiation, the hypertheramic treatment was added once a week with the temperature of 43 C for an hour. Three sessions of hyperthermia have been given.

One month after the completion of radiation, thereby the pain symptom was completely relieved. The exophthalmos and temporal mass showed partial response to the treatment. CT scan showed hypodensity of the tumor in the superficial part, compared with previous CT study, while the deep part showed no response to the treatment. (Fig 2)

The further treatment was then planned by using combination of chemotherapy and hyperthermia. The chemotherapeutic agents : Cyclophosphamide 600 mg, Adriamycin 50 mg and 5-FU 750 mg were given intravenously during the hyperthermic treatment once a month.

After the third course of concommittant chemotherapy and hyperthermia, exophthalmos of the right eye and temporal mass disappeared. CT scan showed markedly decrease of tumor density and size in the orbit, temporal area and also the intracranial mass.

The result of treatment was good. The pain symptom was relieved. Exophthalmos of right eye and right frontotemporal mass were almost disappeared, but the vision of right eye was not recovered. The patient could



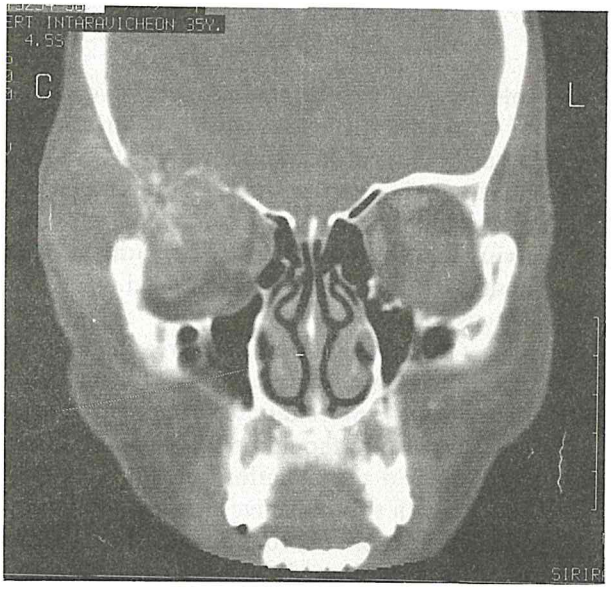


Fig 2 *Photograph and CT scan after radiation and hyperthermia*

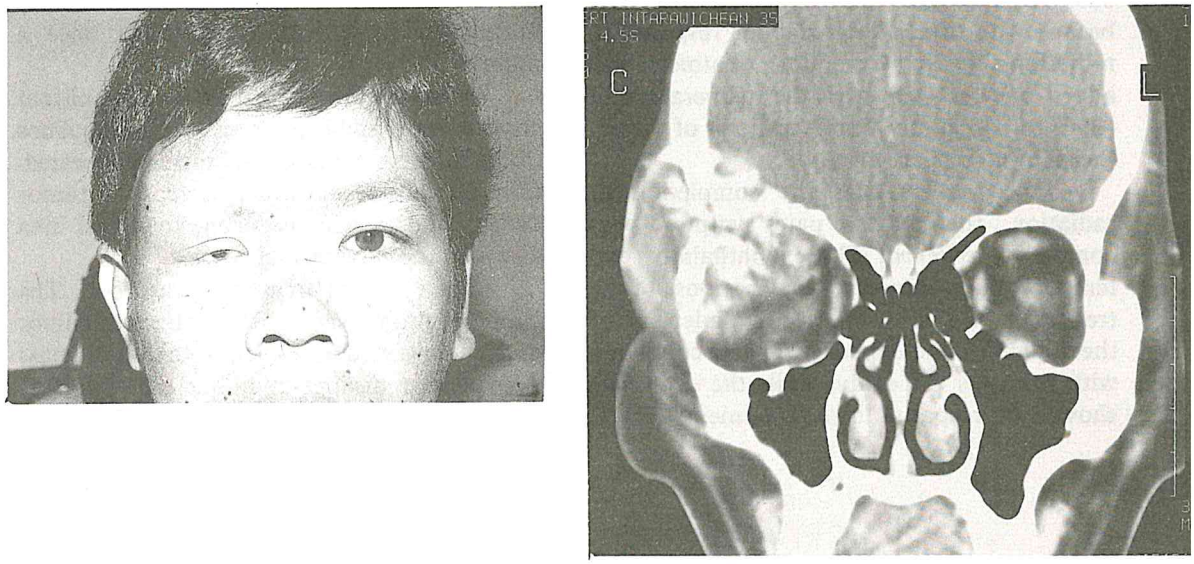


Fig 3 *Photograph and CT scan post 3 courses of chemotherapy and hyperthermia*

tolerate the treatment well even two times of hyperthermic treatment were interrupted because of pain in the deep part. There was no any skin reaction more serious than dry desquamation. There was also mild conjunctivitis that needed no specific treatment. The quality of life was much improved.

Discussion

Objective of palliative treatment is to relieve of the suffering symptom without increasing the morbidity to the patient. Treatment procedure should be simple and not last too long. So the radiation therapy is appropriate with this objective. Radiation therapy for orbital or choroidal metastasis from breast cancer showed the good result in many reports.[11-16] The radiation dose was varied from 30-50 Gy in 2-5 wks and the complete response rate were 25-50%, while the overall response rate was as high as 85%.

Present clinical data showed that the tumor volume is the major determining radiocurability.[17] With the enhancement effect of combination of radiation with heat and chemotherapy, the response to radiation in large tumor will be far better with combination of treatment. Several reports confirmed that the thermal enhancement ratio for breast cancer was around 1.2-2.36.[18-22] The supra-additive effect of chemotherapy and hyperthermia were also reported in some groups of chemotherapeutic agents.[2,23-25]

This patient had suffered from the painful exophthalmos for a period of time. Even for relief of the symptom, radiation therapy alone could not provide the satisfactory result in such an extensive tumor. Radiotherapy combined with hyperthermia was used and it was found that the symptom was partially relieved. The CT scan showed the response

of superficial portion of the tumor became hypodense in the CT scan more than the deep part due to the combination effects of heat and radiation. This is because of the depth of penetration of 915 mHz microwave is not deeper than 3 cm in tissue with high water content such as muscle and skin. Then the response could be observe in the superficial part rather than the deep. Chemotherapy with CAF regimen was added after the maximum tolerance of radiation, combined with hyperthermia. After some degree of shrinkage of the tumor in the superficial part, hyperthermia became effective for the tumor that was previously in the deep part. With this concurrent hyperthermic chemotherapy, at the end of third course, the good result has been shown. The frontotemporal mass was disappeared and the intraorbital mass and also intracranial mass showed good shrinkage. The skin reaction was dry desquamation which became normal after treatment. There was no severe complication from this multimodality approach. The palliative aim reached its goal.

Conclusion

Palliative treatment is one of the major objective in cancer treatment. Multimodality treatment will provide a better result with less complication than single modality. Radiation therapy in conjunction with hyperthermia or trimodal therapy, when chemotherapy was added to the treatment, should be considered in case of locally advanced disease. This technique can also be used in curative intent in the future in order to reduce the sequelae of each modalities.

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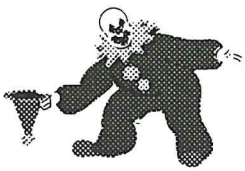
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DRUG INTERACTIONS

Cisplatinum : Nephrotoxicity เพิ่มขึ้น ถ้าให้ร่วมกับพวก Amimoglycosides

5FU : ประสิทธิภาพจะลดลงถ้าผสมหรือให้พร้อมกับ MTX

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