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ARTICLE

Early Experiences with Combined Treatment (Surgery and Brachytherapy) of Gynecological Recurrences Infiltrating the Pelvic Wall

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Neither the surgical nor the radiotherapeutic treatment of gynecological recurrences infiltrating the pelvic wall can be curative alone. The treatment of this group of patients is possible with the CORT (Combined Operative and Radiotherapeutic Treatment) method. As maximal as possible resection of the malignancy is done for patients having no distant metastases and the brachytherapy guiding tubes are implanted into the tumour bed on the pelvic wall. The brachytherapy is carried out postoperatively. An accurate analysis cannot be done because of the short follow up and the few cases. The authors do believe that the survival results of this poor prognostic group may improve by means of this method after proper selection of patients. (Pathology Oncology Research Vol 2, No3, 171–173, 1996)

Key words: pelvic side wall relapses; combined operative and radiotherapeutic treatment

Introduction

Gynecological recurrences infiltrating the pelvic wall that have been treated peviously represent a great task for the therapist since the possibilities of conventional therapy (teletherapy, brachytherapy, surgery or chemotherapy) are limited. The surgery cannot be ablastic since the pelvic wall is involved. These alterations are out of reach for conventional brachytherapy because of the anatomical position, and there is no way to treat it again with teletherapy without exceeding the dose tolerance of the normal tissues.[1,2,3,4,12]

The CORT (Combined Operative and Radiotherapeutic Treatment) method was developed by the Department of Obstetrics and Gynecology and Department of Clinical Radiology, University of Mainz for the treatment of these patients. The treatment requires the close co-operation of the surgeon and the radiation oncologist. After a maximal resection of the malignancy, the brachytherapy guiding tubes are implanted into the tumour bed on the pelvic wall. The catheters are covered by muscle or the omentum maius flap to increase the distance between the catheters and the radio sensitive organs. The revascularisation, starting from the muscle, improves the oxygenation of the tumor bed and through this, its radiosensitivity. The brachytherapy treatment is performed postoperatively using the guiding tubes postoperatively.[5,6,7,8,9,10,11,14]

The theoretical basis of this method is that distant metastases cannot be revealed in 10% of the patients even in the case of extensive local recurrencies. If local control succeeds, the intervention can even be curative.[13,15]

Materials and Methods

According to the CORT method, we treated eight patients from March of 1994 in co-operation with the Dept. of Obstetrics and Gynecology of the St. István Hospital. Six patients having cc. planocellulare histology belonged to the FIGO I group. Surgical and radiotherapy treatment was given to four of them. Two patients were treated with surgery as a first step. The traditional radiotherapy was carried out only when the recurrence appeared and because of the further progression, CORT treatment was given. Two patients belonging to the FIGO IIB group (adenocarcinoma and cc. planocellulare of the cervix uteri) were treated by traditional radiotherapy alone and the CORT treatment was given because of tumour progression and rest tumour. The

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average age of the patients was 48 years (range: 31-65). The average time till the progression was 19 months (range: 3-54). The recurrent tumor propagated on one side of the pelvic wall and the urinary bladder as well as the rectum were involved in all cases.

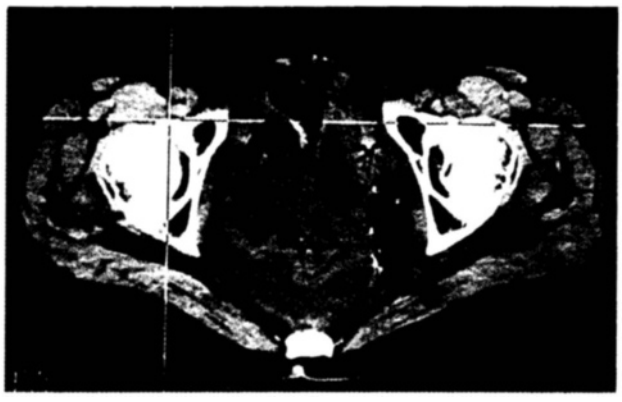

Figure 1. Postoperative CT in axial plane showing the guiding tubes implanted in the tumor bed in the left pelvic wall.

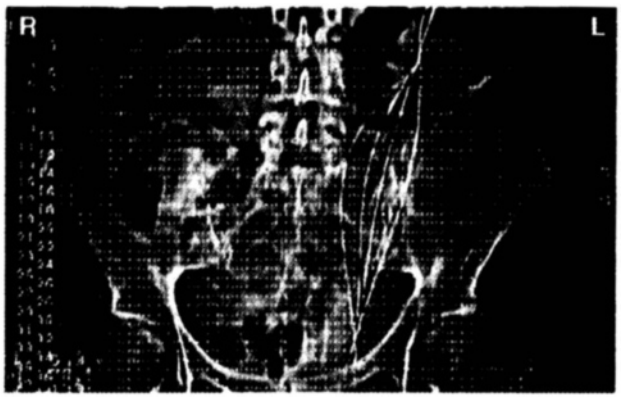

Figure 2. CT reconstruction in the coronal plane of the guiding tubes implanted in the tumor bed in the left pelvic wall.

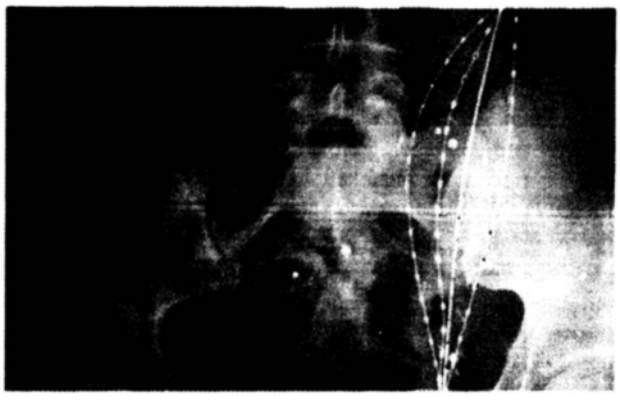

Figure 3. Conventional AP roentgenogram of the guiding tubes implanted in the tumor bed.

The patients were selected also from physical and internal medicine point of view. The treatment was preceded by examination designed to exclude the presence of distant metastases and to determine the size of the recurrent tumor.

The CORT method comprises surgical and brachytherapy parts that are in very close connection. Even the laparotomical exploration that is on the other hand the first step of the surgical intervention ensures the opportunity for excluding dissemination and for determining the extent of recurrence. After the maximal possible tumor resection, the biocompatible flexible close ended end guiding tubes (outer diameter 5 mm, Gammamed Isotopen Technik Dr. Sauerwein) are implanted into the tumour bed on the pelvic wall. The guiding tubes should be implanted as parallel as possible. The distance between their axes is 15-20 mm so the tumor bed and the planning target volume can be irradiated safely. The guiding tubes are covered with muscle and omentum maius flap so that radiation damage of the surrounding radiosensitive pelvic organs can be avoided and the revascularisation starting from the flap improves the oxygenation and through this, the radiosensitivity of the tumor bed. The end of the intervention is the operative reconstruction.

The first step of the brachytherapy is to determine the position of the guiding tubes. This can be done either with computer tomography or with conventional semiorthogonal spatial reconstruction (*Figs.1, 2 and 3*). This step is followed by treatment planning in which the data acquired during the operation as well as the result of the spatial reconstruction is used. The 1rst treatment is carried out on the second week after the surgical intervention with a GAMMAMED 12i remote control high dose rate afterloading operating with Ir^{192}. This treatment is repeated two times a week with 6 Gy calculated at 5 mm from the surface of the guiding tubes. The number of fractions is determined by the total prescribed dose.

The mean value of the dose previously administered to the patients was 39 Gy (24-55 Gy) from teletherapy and 36 Gy (32-39 Gy) and 10.7 Gy (10.6-10.8) at points A and B, respectively from brachytherapy. An additional 37 Gy dose (30-48 Gy) was administered during the CORT treatment. An average of 4 (3-5) catheters were inserted

Results

Eight patients were treated according to the CORT method between March 1994 and February 1996. Supralevator and infralevator total exenteration have been carried out on 6 and 2 patients, respectively. One patient was reoperated on because of an intestinal fistula in the postoperative stage. Following this, a hypertonic crisis tetraplegia occurred. In spite of improving neurologic symptoms, an intestinal fistula developed and the patient died 28 weeks after the operation. One patient was reope-

rated on because of a dislocation of the guiding tubes. In one case, an intestinal fistula towards the abdomen closed in a spontaneous manner 12 weeks after the operation. Two patients died because of progression. The time that elapsed till the appearance of the first recurrence was 11 months, the survival time was 14 months. Recurrence began in one patient 17 months after the operation. She was still alive when the collection of data was finished (21 months). One patient didn't appear for the control examinations. There is no evidence of disease in the 4 month average follow up time (1-8 months) in three patients. The brachytherapy was executed without any kind of complications up to the planned dose in each case.

Discussion and conclusion

Neither the surgery nor the brachytherapy alone provides a good alternative for these patients. The combination of the two treatment modalities, however, has some advantages.[1,2,3,4,12] The size of the tumor can be reduced to a minimum during the operation, the boundaries of the tumour can be visualised so the target volume of the brachytherapy can be easily determined, and an individual target volume can be chosen with the implantation of the flexible guiding tubes. The dose can be localised to the tumor bed as a result of the property of brachytherapy. The radiation damage to the surrounding radiosensitive pelvic organs can be minimized, since the guiding tubes are covered by the omentum and muscle flap. The angiogenesis originating from the flap may improve the oxygenation of the residual tumor and thus the radiation sensitivity. A further advantage is that the total dose can be administered in fractions.[5,6,7,8,9,10,11,14]

Several technical problems occurred with the four patients treated between 03-08 1994, the most important of which was the fixation of the catheters on the pelvic wall.

The papers published by Höckel and his co-workers in that period called attention to three factors that have significant influence on the survival. The five year survival is 60% if the patient is older than 40, the tumour can be cut out macroscopically and the recurrence is smaller than 5 cm. In other cases the five year survival is less than 20% and the size of the recurrence has the greatest effect on this.[9]

Having solved the technical difficulties, we began to continue the CORT method in September 1995, with prognostic factors and the maximum dose administered also taken into account.

Because of the few cases and the short follow up one cannot make a conclusion. We are convinced, however, that using the experiences of the University of Mainz and following proper principals when the patients are selected we can provide a chance for healing for this group of patients.

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