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THE DIAGNOSIS AND TREATMENT FOR RECURRENT DYSPHAGIA OF ESOPHAGEAL CARCINOMA AFTER RADICAL RADIOTHERAPY

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Objective: To investigate the diagnosis and treatment for recurrent dysphagia of esophageal carcinoma after radical radiotherapy. Methods: The experince of 41 cases with recurrent dysphagia of esophageal carcinoma after radical radiotherapy were retrospectively summerized. Results: All of the cases were surgically treated form July, 1989 to May, 1997 with resectability rate in 97%, operative mortality in 4.8%, postoperative morbidity in 29%. Pathological examination showed squemous cell carcinoma in 82.8%, and serious radiation reaction in 13.2% after operation. The 1-, 3-, 5-year survival rates after operation were 72.7%, 36.3%, 18.1% respectively, and those after radiation in 100%, 60%, and 35.5% respectively. Conclusion: Most of recurrent dysphagia for these cases were due to uncontrolled/recurrent cancer, and minority of them were due to constriction after radiotherapy. It is difficult to distinguish cancer with benigh constriction before operation. Some cases have lymphatic metastasis without local cancer recurrence. For those patients with recurrent disphagia should be treated with operation as early as possible.

Key words: Esophageal neoplasm, Radiotherapy, Surgery, Pathology.

From July 1989 to May 1997, 2058 esophagectomies for esophageal cancer were performed in 1st Thoracic Department of Anyang Tumor Hospital, including 41 cases with recurrent symptoms following radical radiotherapy for esophageal carcinoma. In this paper, we reviewed the materials of the 41 patients and summerized the characteristics of their treatment and diagnosis.

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CLINICAL MATERIALS

General Data

This group included 30 males and 11 females. Ages ranged from 41 to 71 years with mean of 57.5 years. The carcinoma located at neck, upper-, middle-, and lower-thorax of esophagus in 5, 9, 21, and 6 respectively. The lengths of lesion before radiotherapy were 7–10 cm in 20 patients, 5–6 cm in 18, 3–5 cm in 3, averaged 7.2 cm. 27 cases were radiated with tranditional ^{60}Co only, 4 cases with ^{192}Ir intraluminal radiation only, 10 with ^{60}Co and ^{192}Ir. The radiation doses ranged from 60_{GY}–81_{GY}, with mean of 70_{GY}. In this series, the main symptoms were re-dyphagia, partial patients also had pain in chest and back. X-ray film mainly showed stenosis, smaller filling defects, mucosal destruction, luminal kinking, and nitches. The perioperative length of cancers in esophagrams showed 7–10 cm in 5 patients, 5–6 cm in 19, shorter than 5 cm in 11. The duration between radiation and

surgery ranged from 2 months to 20 years, including 13 cases within 6 months, 7–12 months in 11 cases, 1–2 years in 3, 2–3 years in 2, 5 years in 2, 8–20 years in 5. 33 cases received fibral optical esophagoscopy examination (FOE) and biopsy before operation. 25 out of 33 showed macroscopically luminal neoplasm, and only 15 out of 33 microscopic cancer cells in bioptic spesmens. FOE could not be passed through the diseased esophagus lumen and examined whole length of the lesion in 10 of 33 cases due to serious stenosis at upper extremity of the lesions.

Operations, Complications and Survival Rates after Treatment

All of 41 were surgically treated, 35 radical resections, 4 paliative operations and 2 sole explorative thoractomies, with resectability rate of 97%. Operations were finished through left-thoractomy in 31, right-thoracotomy combined laparotomy and neck incision in 6 cases, and nonthoractomy-transmediastinal esophagus inversion extraction in 4 cases. All of neo-esophagus were stomach, reconstructing at neck in 27, anastomosing intrathorax in 14 cases. 2 patients died from cerebral compliction and cardiac infarction respectively, with operative mortality rate of 4.8%. The complications morbidity was 29%, including 5 pneumonia, 1 chylothorax, 3 anastomstic leakege locted at neck, and 3 cardiac complictions. Pathologically, 34 specimens were diagnosed as squemous cell carcinoma, 7 (17.2%) with total regression macroscopically and thorough disappearance of malignat cell microscopically, which were called as Grade III radiation reaction. 15 (36.3%) cases had regional lymphtic metastasis, including 2 non-malignant cells in esophagus. The 1-, 3-, 5-year survival rate afte roperation in resected group was in 72.2%, 36.3%, 18.1%, respectively, and those after radiation in 100%, 60%, and 35.5% respectively. However, the 2 sole explored patients died within 6 months after operation.

DISCUSSION

Radical radiotherapy has been developing as one of the three main treatments for esophageal carcinoma.[1] The failure reasons of radiotherapy for esophageal cancer are local recurrence and uncontroll. There are some characteristics and problems in diagnosis and treatment for those patients who had re-dysphagia after radical radiotherapy.

Diagnosis

Recurrent symptom of esophageal cancer after radiotherapy, mainly arising from local uncontroll, recurrence, and cicatrization,[1–3] showed more serious dysphagia compared to no-radiated patients. In this seris, 90% cases suffered dysphagia accopaning pain in chest and back in some of them. X-ray film showed luminal stenosis, kinking, mass, filling defects, mucosal unceration. These X-ray signs were similar to no-radiation film showings of esophagus with more rigid outline. However, it is little differences between benigh stenosis related to radiation and cancerous recurrence in X-ray films' showings. In this series, 4 out of 7 with Grade III radiation reaction had these graphic signs mentioned above. In 33 cases received FOE and biopsy, macroscopic lumial neoplasm were discovered in 25 cases, and microscopic cancer cells in 15 cases. 10 out of 33 could not be examined whole length of the diseased esophagus lumen due to serious stenosis at the upper extremity of lesion. This may partialy account for the lower positive rate of biopsy. In adddition, some study results have proved that recurrent lesion usually arouse from the center of carcinoma and fiberal tissues surrouding the cancer center, which may be also related to the lower positive biopsy rate. Besides, 2 out of 7 without cancer cell in diseased esophagus had lymphatic metastsis. Based above, we held that the recurrent dysphagia of esophagus cancer following radical radiation should be diagnosed mainly by X-ray esophagram and by FOE macroscopic assessment, and that should not be decided by FOE positive biopsy only.

Treatment

With the advances of radiobiology, radiophysics, and radio-imitation loconizing techniques, the efficacy of radiotherapy for esophageal cancer has been gradually improved. Its less side effects, better life quanlity have drawn lots of attention from clinicians and favored by patients. Because of the difference in biological traits among esophageal cancers and sesitivity to radiation, the radiotherapy results for esophagus varis grately. The proportion of re-dysphagia following radiotherapy is very high, but the result with re-radiation for these patients is rather

poor.[1,2] It is needed to explore some other remendy treatment, including surgery. Due to advance of lesion, the harmfulness of radiation to local area of esophagus and whole body, the operation has certain difficulties compared to no-radiated cases. Surgeons and therapists hold cautious view about this kind so-called remendy operation, with little experinces in literature. The small number of this kind clinical situation in the present study, 41/2058 (0.2%), partially account for the wary of doctors. In this group, the resectbility rate reached to 97%, compared with 75.9%–82.3% in literature.[4,5] The 1-, 3-, 5-year survival rate was 72.7%, 36.3%, 18.1% respectively after surgery. If the survival rates calculated from completion of radiotherapy, they were in 100%, 60%, and 35.5% respectively, much higher than those of surgery or radiation only. 4.8% operative mortality and 29% complication rate in this series were somewhat higher than that of cases originally treated by surgery, is nevertheless encouraging due to the benifit brought by remendy operation. We believe that those cases with recurrent dysphagia following radiotherapy of esophageal carcinoma, having fair general condition, without gross dysfunction of vital organs, and clinical signs of distant metastasis, should be operated on as early as possible.

Pathological Characteristics and Operative Techniques

Slower blood flow and obliteration within microvasculation caused by radiation is the later stage traumatic basis of radiated tissues. The duration between radiation and surgery has still been a debating problem in planned prioperative radiation. Most of surgeons held that the operation should be performed no later than 2 months after radiation, and the best interval is 2–3 weeks following radiotherapy. Bleeding in early stage and dense adhesion in later stage affect operative performance. The interval, however, in radical-radiation is difficult to control, from 2 months to 20 years in the present group. Dense fibrous adhesions presented between "recurrent cancer" and nearby important organs and within the diseased segment of the esophagus itself. These adhesion demonstrated pale, edema, no-bleeding, and no normal anatomical spaces appearance. Using sharp surgical dissection along with the "normal anatomical spaces", most of "neplasm" could be removed *en block*. Occasionally, the segment of azygos vein/ thoracic duct/outer cover of aorta, infiltrated by cancerous esophagus should be resected. The small aera of membranous bronchus invaded by tumor should also be resected and followed by a trachea/ bronchoplasty (2 cases), and ocasional strenthening with OB glue.[6] It is the key for successful operation that operator should master normal local anatomy and choose suitable sharp dissection. In this series, 2 cases with fibrious adhesions and cancerous invasions were so heavy that the mediastinal structures were in a "frozen" situation, rendering resection impossible. Retrospective analysis of preoperative X-ray films of these 2 cases reveals that their diseased esophagus was longer than 8 cm. Because of no better differentiating methods between recurrent carcinoma and benigh stenosis before operation, and because of the clinical phenomenon without primary cancer but with lymphatic metastasis, the cases with re-dysphagia shoud be operated on as soon as discovery no matter cancer or stenosis. In this study, 29% cases suffered from postoperative complications, including 3 cardiac disorders, 1 chylothorax, 3 neck anastomostic leakage with major problem being pneumonia (5 cases), which was higher than that of sole-operation group. Besides, we often discovered local pulmonary fibrosis within the radiated field during operation. This made more dangerous in this kind of patients than in usuaral esophdgectomy, accounting for higher mortality in some groups.[6] It is important that for decreasing mortality and morbidity— surgeons should focus on pre- and post-operative treatment for this kind patients.

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