

GASTROINTESTINAL TRACT REACTIONS CAUSED BY RADIOTHERAPY AND CHEMOTHERAPY

Wang et al. reported on the effects of materia medica for augmenting Qi and invigorating the Blood in relation to gastrointestinal tract reactions (nausea, diarrhea, anorexia) caused by radiotherapy and chemotherapy given to patients with intermediate stage and late-stage pancreatic cancer that was not suitable for surgery.¹²

Groups: The authors observed 58 patients from March 1994 to November 1997 during radiotherapy and chemotherapy for pancreatic cancer. They divided them randomly into two groups according to date of admission to their hospital:

- Group A consisted of 28 patients, 21 male and 7 female, aged from 32 to 65 (mean age 49.7 ± 4.1); according to WHO classifications, 19 patients were at stage II and 9 at stage III. These patients were treated with a combination of radiotherapy and chemotherapy by arterial perfusion.
- Group B consisted of 30 patients, 22 male and 8 female, aged from 31 to 66 (mean age 48.2 ± 5.7); 19 patients were classified as stage II and 11 as stage III. In addition to the radiotherapy and chemotherapy regimes given to the patients in group A, group B was also given materia medica for augmenting Qi and invigorating the Blood.

The main clinical manifestations of both groups included abdominal pain and obstructive jaundice. CT and MRI indicated that the pancreatic cancer had invaded adjacent large vessels and the duodenum.

Treatment

- *Radiotherapy:* linear accelerator; 4-6 MY X-ray, external radiotherapy with the irradiated area extending 1-2cm beyond the pancreatic cancer focus, daily fraction of 1.8-2.0 Gy, five sessions per week, making a total dosage of 50-60 Gy over 6-7 weeks. Radiotherapy was halted during chemotherapy and restarted thereafter.

- *Chemotherapy* by arterial perfusion: after one week of radiotherapy (dosage of 10 Gy), chemotherapy was started with 1000mg of 5-fluorouracil, 10mg of mitomycin and 80mg of cisplatin per week. There was an interval of 4-5 weeks between chemotherapy courses. Chemotherapy was given on 45 occasions to the 28 patients in Group A (1.61 times per patient) and on 52 occasions to the 30 patients in group B (1.73 times per patient).

TCM prescription

SI JUN ZI TANG JIAJIAN

Four Gentlemen Decoction, with modifications

Huang Qi (Radix Astragali seu Hedysari) 30g

Tai Zi Shen (Radix Pseudostellariae Heterophyllae) 30g

Fu Ling (Sclerotium Poriae Cocos) 15g

Bai Zhu (Rhizoma Atractylodis Macrocephalae) 10g

Dan Shen (Radix Salviae Miltiorrhizae) 30g

Chi Shao (Radix Paeoniae Rubra) 30g

San Leng (Rhizoma Sparganii Stoloniferi) 10g

Ji Xue Teng (Caulis Spatholobi) 30g

Qian Cao Gen (Radix Rubiae Cordifoliae) 30g

Gan Cao (Radix Glycyrrhizae) 10g

Modifications

For pronounced abdominal pain, *Bai Ji** (Rhizoma Bletillae Striatae) 10g was infused in the decoction.

For jaundice due to severe Damp-Heat, *Yin Chen Hao* (Herba Artemisiae Scopariae) 20g was added.

For abdominal distension and poor appetite due to Spleen Deficiency and Damp obstruction, *Jiao Shan Zha* (Fructus Crataegi, scorch-fried) 15g, *Jiao Shen Qu* (Massa Fermentata, scorch-fried) 15g and *Jiao Mai Ya* (Fructus Hordei Vulgaris Germinatus, scorch-fried) 15g were added.

One bag was used to prepare a decoction with 500ml of water, which was boiled down to 100ml of a concentrated liquid, with 50ml taken twice a day. The decoction was started one week before chemotherapy and continued until two weeks after completion of the chemotherapy course. For severe gastrointestinal reaction during interventional radiological treatment, nasogastric feeding was undertaken.

Results CX² test used for statistical purposes)

One-year and two-year survival rates, at 80.0 percent and 46.6 percent, were significantly higher in group B than in group A, where the corresponding figures were 50.0 percent and 21.4 percent CX² = 5.66 and 4.19 respectively, $P < 0.05$).

Abdominal pain disappeared completely in 16 out of 28 patients (57.1 percent) in group A and 25 out of 30 patients (83.3 percent) in group B. The difference between the two groups was significant CX² = 4.37, $P < 0.05$).

Jaundice showed a significant improvement in comparison with the situation before treatment in 14 patients out of 28 (50.0 percent) in group A and 23 patients out of 30 (76.7 percent) in group B CX² = 4.55 and $P < 0.05$).

Gastrointestinal reactions including nausea, diarrhea, anorexia and ulceration were staged based on the WHO classification of gastrointestinal reactions. Eleven patients in group A were above grade II compared with four in group B CX² = 4.93 and $P < 0.05$).

Discussion

Radiotherapy plus chemotherapy via arterial perfusion can enhance the effectiveness of pancreatic cancer treatment. However, the organs near the pancreas such as the small intestine, liver and kidneys have a relatively low tolerance to radiotherapy; in addition, chemotherapy by perfusion will cause local edema and aggravate the side-effects in the gastrointestinal tract, thus reducing the effect of the treatment and affecting the quality of life.

Materia medica for invigorating the Blood and transforming Blood stasis such as *Dan Shen* (Radix Salviae Miltiorrhizae), *Chi Shao* (Radix Paeoniae Rubra), *Qian Cao Gen* (Radix Rubiae Cordifoliae), *Ji Xue Teng* (Caulis Spatholobi) and *San Leng* (Rhizoma Sparganii Stoloniferi) limit the extent to which edema caused by radiotherapy and chemotherapy damages the tissue surrounding the gastrointestinal tract and pancreas, reduce obstruction of the bile duct caused by compression due to the tumor and surrounding tissue, and benefit the secretion of bile. These herbs can also alleviate pain.

Qian Cao Gen (Radix Rubiae Cordifoliae) and *Bai Ji* (Rhizoma Bletillae Striatae) reduce damage to the gastrointestinal tract caused by radiotherapy and chemotherapy and enhance repair of the damage. Materia medica for fortifying the Spleen and augmenting Qi such as *Huang Qi* (Radix Astragali seu Hedysari), *Tai Zi Shen* (Radix Pseudostellariae Heterophyllae), *Fu Ling* (Sclerotium Poriae Cocos), *Bai Zhu* (Rhizoma Atractylodis Macrocephalae), *Chi Shao* (Radix Paeoniae Rubra), *Jiao Shan Zha* (Fructus Crataegi, scorch-fried), *Jiao Shen Qu* (Massa Fermentata, scorch-fried) and *Jiao Mai Ya* (Fructus Hordei Vulgaris Germinatus, scorch-fried) further improve the gastrointestinal function and increase food intake. As the constitution becomes stronger, the adverse side-effects of the radiotherapy and chemotherapy courses will be reduced.