

Abstract Title

Safety and efficiency of image-guided cryoablation in unresectable pelvic recurrent colorectal cancer

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BACKGROUND: Colorectal cancer (CRC) is the fourth most commonly diagnosed cancer and the second leading cause of cancer death worldwide. Although surgery provides a potentially curative option for selected patients with advanced tumor, isolated local recurrence, or limited intra-abdominal disease. The pelvic recurrence after surgery remains a great challenge. The patients who do not response to or who experience progression with radiotherapy or chemotherapy have no treatment options that clearly confer a survival benefit. Local ablation therapy, such as radiofrequency ablation, microwave ablation and cryoablation, have long been applied for inducing cellular damage, and is used most frequently in the liver, kidney, lung and metastatic disease.

HYPOTHESIS: Owing to the ability of well visualized on computed tomography (CT) imaging, effective pain relief and controllable ablation zone, CT-guided cryoablation could be a potential alternative choice in the colorectal cancer treatment strategies, especially for recurrent colorectal cancer. Here, we retrospectively assessed the safety and efficiency of CT-guided cryoablation in the treatment of unresectable pelvic recurrent colorectal cancer.

METHODS: From January 2013 to April 2015, thirty-one lesions in 27 patients (16 males, 11 females; mean age of 57.2 years, range, 33–75 years) with pelvic recurrent colorectal cancer who do not respond to or who experience progression with radiotherapy or chemotherapy were treated with CT-guided cryoablation. The primary tumor included 26 rectal cancer, and one sigmoid colon adenocarcinoma. Abdominoperineal resection (Miles operation) was performed on 21 patients, low anterior resection (Dixon operation) on 5 patients. Pelvic recurrent tumor size ranged from 1.2 to 6.3 cm (3.37 ± 1.41 cm) in diameter. Cryoablation was performed with 17-gauge cryoprobes and monitored by 64-slice spiral CT. The degree of pain palliation was recorded with the Numerical rating scale (NRS). A multidisciplinary colon cancer team in the hospital was convened to assess the treatment response according to modified Response Evaluation Criteria in Solid Tumors (mRECIST). Complications were defined as major or minor complications according to Society of Interventional Radiology Clinical Practice Guidelines.

RESULTS: The cryoablation procedure was well tolerated in all patients without major complications or procedure-related mortality. Long-term complications included abscess formation (one patient), skin frostbite and post-sacrum antrum formation (one patient). Pain relief was satisfactory in patients with perineal pain ($P < 0.001$), and the median time of pain relief was 3.0 months. Complete ablations were obtained in 22 treated lesions of 18 patients, and 9 lesions in 9 patients underwent incomplete ablation. Median time to local recurrence for lesions with complete ablations was 15.0 months (95% CI: 13.1–16.9). Meanwhile, median time to progression for tumors with incomplete ablations was 4.0 months (95% CI: 1.2–6.8). CT-guided cryoablation is a safe and highly effective therapeutic option for pelvic recurrent colorectal cancer.