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Argon plasma coagulation in the treatment of hemorrhagic radiation proctitis

Hemorajik radyasyon proktitin tedavisinde argon plazma koagülasyon

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Hemorrhagic radiation proctosigmoiditis is a serious complication of pelvic radiation therapy. Pharmacotherapy is generally ineffective in the treatment of chronic radiation proctitis. Argon plasma coagulation is an effective, safe and well-tolerated therapy option for radiation proctitis. We report a case of hemorrhagic radiation proctosigmoiditis treated successfully with Argon plasma coagulation. We used argon plasma coagulation for mucosal coagulation in painting pattern set at 1.5 L/min and 60 W. After five therapy sessions with argon plasma coagulation, the patient's rectal bleeding and anemia resolved. After four months of argon plasma coagulation therapy, the patient is well and her endoscopic examination showed remarkable improvement of the vascular lesions. Blood transfusion requirement was resolved after therapy, and hemoglobin level increased from 8.2 g/dl to 11.5 g/dl. Argon plasma coagulation therapy may be useful as alternative treatment for hemorrhagic radiation proctitis. Future prospective controlled trials are necessary to confirm the efficacy of argon plasma coagulation in the treatment of radiation proctitis.

Key words: Hemorrhagic radiation proctosigmoiditis, argon plasma coagulation (APC)

Hemorajik radyasyon proktosigmoidit, pelvik radyasyon tedavisinin ciddi komplikasyonlarından biridir. Tedavisinde ilaç tedavisi genellikle etkili değildir. Hemorajik proktitin tedavisinde argon plazma koagülasyon güvenli, iyi tolere edilen, ucuz ve etkili bir tedavi seçeneğidir. Bu yazıda argon plazma koagülasyon ile tedavi edilen hemorajik radyasyon kolit vakası sunuldu. Hastaya 1.5L /dakika ve 60 Watt dozunda beş seans argon plazma koagülasyon tedavisi ile mukozayı boyar tarzda koagulasyon uygulandı. Bu tedavi sonunda hastanın anemisi ve rektal kanaması düzeldi. Argon plazma koagülasyon tedavisinden 4 ay sonra hastanın durumu iyiydi ve endoskopik muayenede vasküler lezyonların belirgin şekilde iyileştiği gözlendi. Daha önceki sürekli kan trasfüzyon ihtiyacı kayboldu. Ayrıca hemoglobin düzeyinin 8.2 gr/dl den 11.5 gr/dl ye çıktığı görüldü. Sonuç olarak argon plazma koagülasyon, hemorajik radyasyon proktitin tedavisinde alternatif tedavi seçeneği olarak kullanılabilir. Ancak bu konuda prospektif geniş vaka serisi olan çalışmalara ihtiyaç vardır.

Anahtar kelimeler: Hemorajik radyasyon proktosigmoidit, argon plazma koagülasyon

INTRODUCTION

Radiation-induced proctosigmoiditis is a well-recognized complication of radiation therapy for malignant tumors in the pelvis (1-2). Acute complications occur among 50-75% of patients and include abdominal pain, diarrhea, and tenesmus. These symptoms often resolve after two to six months. However, chronic radiation injury such as fistula, ulceration, and bleeding occur among 5%-20% of patients, and their therapy is much more difficult. Especially hemorrhagic rectal bleeding can present a major management problem, and massive bleeding sometimes occurs that necessitates repeated hospital admissions and blood transfusions (3). Treatment for this condition remains unclear. Pharmacotherapy is often ineffective, and surgical intervention, which has a high morbidity and mortality, should be avoided (2, 4-7). Endoscopic therapies such as laser (Nd:YAG), bipolar electrocoagulation, heat probe coagulation, formalin therapy and argon plasma coagulation (APC) have been used successfully for therapy of hemorrhagic radiation proctitis (3). Since APC is an effective, safe and well-tolerated treatment for rectal bleeding caused by chronic radiation proctitis, it should be considered as a first-line therapy (8). In this report, we present a case of hemorrhagic radiation proctitis treated successfully with APC.

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CASE REPORT

A 66-year-old woman was admitted to the Gastroenterology Department of Gaziantep University Hospital in September 2003 with the complaints of rectal bleeding. She had received a total dose of 60 Gy of external pelvic irradiation for cervical carcinoma in September 2001. She had a three-year history of weekly rectal bleeding for which she had used 5-aminosalicylic and corticosteroid enemas. The symptom gradually worsened despite pharmacological treatment, and she received one or two units of blood transfusion per month regularly. The patient presented with daily rectal bleeding for the last two months. Her family history was negative. Physical examination revealed an orientated, anemic woman. The liver and spleen were not palpable, and no ascites was detected. In laboratory evaluation, hemoglobin was 8.2 g/dl and the other biochemical values were normal. The examination of abdomen by ultrasound and computed tomography revealed no recurrence of cervical cancer. Colonoscopic examination showed diffusely friable mucosa and bleeding telangiectases in the rectum, extending proximally 5-10 cm from the anal verge (Figure 1). After preparation with oral electrolyte lavage solution, the patient received APC therapy using a flexible rectosigmoidoscopy. The APC equipment used was a combined high frequency electrosurgical generator and argon source and a 2.5 mm diameter flexible probe inserted through the working channel of a standard rectosigmoidoscopy. APC therapy was performed twice weekly. We applied the paint brushing technique (Figure 2). Argon flow and electrical power were set at 1.5 L/min and 60 W. After the second APC session, rectal bleeding stopped and blood transfusion was not required. Five sessions were required to achieve complete coagulation of all visible vascular lesions. Each of the five sessions lasted about 10 min and pre-medication was not used. APC was well tolerated without any complications or side effects. After APC treatment, hemoglobin level increased from 8.2 g/dl to 11.5 g/dl. Regular transfusion requirement ceased. Four months after the APC treatment, repeat colonoscopy revealed complete eradication of telangiectases and nearly normal mucosal pattern. After completion of APC treatment, the patient was still in remission at one year of follow-up without any rectal bleeding, and her hemoglobin level was above 11.5 g/dl. Colonoscopic exam showed normal mucosal pattern.

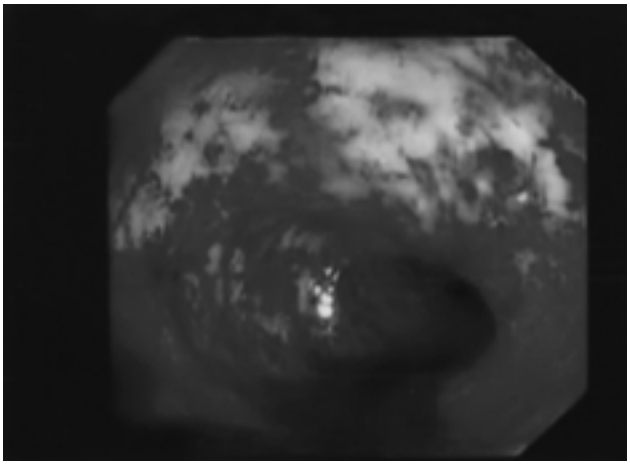

Figure 1. Endoscopic appearance of friable mucosa and bleeding telangiectases on the rectum

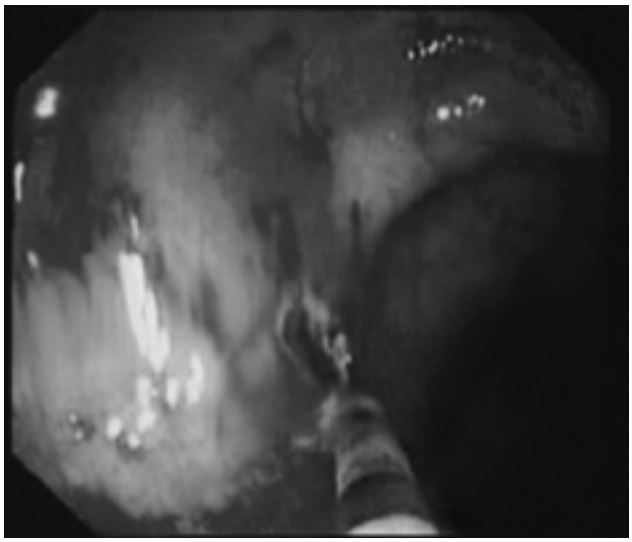

Figure 2. Treatment of radiation proctitis with APC

DISCUSSION

Frequent use of radiation treatment in pelvic malignancies has led to increased incidence of acute and chronic radiation proctitis (1). More than 75% of patients receiving pelvic radiotherapy develop acute anorectal symptoms, and in up to 20% of patients persistent radiation-induced proctopathy occurs (9). The commonest symptom is diarrhea in acute radiation injury. Other manifestations include abdominal cramps, tenesmus and, less commonly, rectal bleeding. Histopathological changes in acute radiation injury are often limited to the superficial mucosa (10). Most symptoms resolve within a few weeks after cessation of radiotherapy (11). If required, its treatment is symptomatic

with fiber supplements and anti-motility agents (12). In contrast, pathological changes in chronic radiation proctopathy are characterized by significant submucosal as well as mucosal changes. These changes include focal destruction, intimal fibrosis and fibrin thrombi of small arteries and arterioles (13). Nevertheless, sigmoidoscopic examination determines edematous and friable mucosa, telangiectatic vessels and focal mucosal ulceration (10). There are no standard therapies for management of chronic radiation proctitis. Many treatment options have been used, such as pharmacotherapy (oral and rectal 5 ASA, steroids, sucralfate enemas), hyperbaric oxygen, endoscopic laser and heater probe therapy and surgery (14). Parikh et al. suggested that formalin may be effective as a first-line therapy for radiation proctitis (15). But to date there are no prospective controlled studies in the therapy of radiation colitis. Laser treatment was used successfully to stop rectal bleeding in this case and it has the advantage of being a noncontact technique, preventing adhesion to the tissue (16). However, it is technically difficult, expensive and associated with a high risk of perforation (17).

Argon plasma coagulation is a noncontact method of delivering high frequency monopolar current through ionized and electrically conductive argon gas (18, 8). In recent years, APC has been successfully used as treatment of endoscopic lesions such as watermelon stomach, vascular malformations, Barrett's esophagus ablation, bleeding peptic ulcers and radiation proctopathy (19). This technique is especially well suited for the coagulation of large mucosal bleeding areas. Other advantages of APC are mobility, low expense, minimal complications and limited depth of penetration (2 to 3 mm) (20). In the literature, many studies about the use of APC in the therapy of hemorrhagic radiation proctitis have been published. For example, Kaassis et al. reported excellent therapeutic results with APC at a power setting of 40 W and with a gas flow of 0.6 L/min (8). In other studies, APC was used with power settings varying from 40 to 60 W and with gas flows from 1 to 1.5 L/min (3, 21-24). In our case, we applied APC set at 1.5 L/min and 60 W in all sessions. In many case series it is reported that the majority of patients achieved symptomatic improvement and complete remission after two to four treatment courses with APC (1, 3, 8). In our case, complete resolution of hemorrhagic lesions and hematological improvement occurred after five APC sessions.

After APC treatment of proctitis, acute complications such as tenesmus, abdominal distention and anismus occurred in 19% of patients. Nevertheless, more serious reported complications include rectovaginal fistula, rectal strictures, Gram-negative bacteremia and transient urinary retention (19). However, in our patient, no complications were encountered during or after each session of APC treatment despite the fact that no pre-medication was used.

In conclusion, APC therapy may be a useful treatment for hemorrhagic radiation proctitis, but a prospective controlled trial with a large number of patients is required to prove the effectiveness of APC therapy in radiation colitis.

REFERENCES

1. Tagkaldis PP, Tjandra JJ. Chronic radiation proctitis. Aust N Z J Surg 2001; 71: 230-7.
2. Gilinsky NH, Burms DG, Barbezat GO, et al. The natural history of radiation-induced proctosigmoiditis: an analysis of 88 patients. Q J Med 1983; 205: 40-53.
3. Silva RA, Correia AJ, Dias LM, et al. Argon plasma coagulation therapy for haemorrhagic radiation proctitis. Gastrointest Endosc 1999; 50: 221-4.
4. Fischer L, Kimose HH, Spjeldnaes N, et al. Late progress of radiation-induced proctitis. Acta Chir Scand 1990; 156: 801-5.
5. Baum CA, Biddle WL, Miner PB. Failure of 5-aminosalicylic acid enemas to improve chronic radiation proctitis. Dig Dis Sci 1989; 34: 758-60.
6. Triantafillidis JK, Dadioti P, Nicholakis D, et al. High doses of 5-aminosalicylic acid enemas in chronic radiation proctitis: comparison with betamethasone enemas (letter). Am J Gastroenterol 1989; 84: 1587-8.
7. Browning GC, Verma JS, Smith NA, et al. Late results of mucosal proctectomy and coloanal sleeve anastomosis for chronic radiation rectal injury. Br J Surg 1987; 74: 31-4.
8. Kaassis M, Oberti E, Burtin P, et al. Argon plasma coagulation for the treatment of haemorrhagic radiation proctitis. Endoscopy 2000; 32 (9): 673-6.
9. Hayne D, Vaizey CJ, Boulos PB. Anorectal injury following pelvic radiotherapy. Br J Surg 2001; 88: 1037-48.
10. Haboubi NY, Path MRC, Schofield PF, et al. The light and electron microscopic features of early and late phase radiation induced proctitis. Am J Gastroenterol 1988; 83: 1140-4.
11. Coia LR, Myerson RJ, Tepper JE. Late effects of radiation therapy on the gastrointestinal tract. Int J Radiat Oncol Biol Phys 1995; 31: 1213-36.
12. Chi KD, Ehrenpreis ED, Jani AB. Accuracy and reliability of the endoscopic classification of chronic radiation induced proctopathy using a novel grading method. J Clin Gastroenterol 2005; 39 (1): 42-6.

13. Haselton PS, Carr N, Schofield PF. Vascular changes in radiation bowel disease. Histopathology 1985; 9: 517-34.
14. Hong JJ, Park W, Ehrenpreis ED. Review article: current therapeutic options for radiation proctopathy. Aliment Pharmacol Ther 2001; 15: 1253-62.
15. Parikh S, Hughes C, Salvati EP, et al. Treatment of haemorrhagic radiation proctitis with 4 percent formalin. Dis Colon Rectum 2003; 46 (5): 596-600.
16. Viggiano TR, Zighelboim J, Ahlquist DA, et al. Endoscopic Nd:YAG laser coagulation of bleeding radiation proctopathy. Gastrointest Endosc 1993; 39: 513-7.
17. Hunter JG, Burt RW, Becker JM, et al. Colonic mucosal lesions: evaluation of monopolar electrocautery, argon laser and neodymium: YAG laser. Curr Surg 1984; 41: 373-5.
18. Waye JD, Grund KE, Farin G. Argon plasma coagulation (APC). Clinical usefulness in flexible endoscopy. Gastrointest Endosc 1996; 46: A 306.
19. Vargo JJ. Technological review: clinical applications of the argon plasma coagulator. Gastrointest Endosc 2004; 59 (1): 81-8.
20. Farin G, Grund KE. Technology of argon plasma coagulation with particular regard to endoscopic applications. Endosc Surgery 1994; 2: 71-7.
21. Tam W, Moore J, Schoeman M. Treatment of radiation proctitis with argon plasma coagulation. Endoscopy 2000; 32: 667-72.
22. Rochalon A, Papillon E, Fournet J. Is argon plasma coagulation an efficient treatment for digestive system vascular malformation and radiation proctitis? Gastroenterol Clin Biol 2000; 24: 1205-10.
23. Fantin AC, Binek J, Suter W, et al. Argon beam coagulation for treatment of symptomatic radiation-induced proctitis. Gastrointest Endosc 1999; 49: 515-8.
24. Villavincencio RT, Rex DK, Rahmani E. Efficacy and complications of argon plasma coagulation for hematochezia related to radiation proctopathy. Gastrointest Endosc 2002; 55: 70-4.