

## RADIATION PROCTITIS: CASE SERIES OF TREATMENT WITH ARGON PLASMA COAGULATION IN KLAIPEDA UNIVERSITY HOSPITAL

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**Key words:** radiation proctitis, argon plasma coagulation.

### Summary

Radiation proctopathy is defined as rectal damage due to radiation with or without inflammation.

**Objectives and methods.** The aim of this study was to present our clinical experience, regarding the argon plasma coagulation, in a small series of patients with radiation proctitis. Retrospective data analysis of patients treated for radiation proctitis in a single hospital setting from year 2014 to 2017 was performed. Statistical data analysis was carried out using the SPSS 20.0 software.

**Results.** 13 patients underwent argon plasma coagulation. The female and male ratio was 1:2,25. The mean age of the patients was 70,69±13,51 years. All men (n=9) had radiotherapy due to prostate cancer and cervical cancer was the main cause in women group (n=4). Six patients (46%) had second plasma coagulation done. Three patients (23%) had endoscopic argon plasma coagulation. Mean hospital stay was 4,47±8,83 days. Necrosis of mucous membrane was observed in one patient (7,69%).

**Conclusion.** There is no evidence-based consensus regarding treatment of radiation proctitis. Argon plasma coagulation seems to be safe and effective choice of treatment, but further studies are required to determine which methods should be considered as the „gold standard” choice.

### Background

Radiation proctopathy is the condition defined as rectal damage due to radiation that is associated with or without

inflammation and occurs after radiotherapy of cancers of the rectum, anus, cervix, uterus, prostate, urinary bladder, or testes [1]. The rectum and sigmoid colon are mostly affected areas.

The true incidence of radiation proctitis (RP) remains unclear because of lack of the large controlled trials, but various retrospective analyses show incidence between 2% and 20%, with approximately 85% of patients developing symptoms within the first 2 years after initial radiotherapy [2].

Acute radiation injury of rectum occurs within three months of starting radiotherapy. Symptoms of chronic RP arise 3 months and later after radiotherapy, however usual time is 9-14 months [3].

The common symptoms are rectal bleeding, rectal pain, diarrhea, even tenesmus or mucus can occur. There is no evidence-based consensus regarding management of bleeding due to RP, thus the first choice of the treatment remains unclear. Nevertheless various conservative and surgical intervention options have been developed.

In general treatment modalities may be classified as medical, endoscopic or surgical therapies.

Different literature sources provide huge variety of therapeutic treatment options which include anti-inflammatory drugs, antioxidants, sucralfates, steroids, formalin applications, sodium butyrate enemas, hyperbaric oxygen therapy, pentoxifylline, rebamipide enemas, Vitamin A, short chain fatty acid enemas, oestrogen/progesterone, sodium pentosan polysulphate, misoprostol suppository, antibiotics [4].

Endoscopic intervention techniques include contact probe therapy (heater probe, bipolar electrocautery), laser ser therapy (neodymium-doped yttrium aluminium garnet (Nd:YAG), potassium titanyl phosphate (KTP) and argon lasers), argon plasma coagulation, radiofrequency ablation, cryoablation [4].

Surgical operations range from a proximal diverting stomas to a colorectal resections with or without anastomosis and is considered to be the last resort choice.

Since acute RP is often self-healing, the mentioned treatment methods are the most often used for chronic RP.

### Objectives and methods

The aim of this study was to present our clinical experience, regarding the argon plasma coagulation, in a small series of patients with RP.

Retrospective data analysis was performed of the patients treated in Klaipeda university hospital from year 2014 to 2017.

Statistical data analysis was carried out using the SPSS 20.0 software.

### Results

During the period from year 2014 to 2017 altogether 13 patients underwent argon plasma coagulation procedure. Demographic statistics showed that female and male ratio was 1:2,25 and the mean age was  $70,69 \pm 13,51$  years. Analysis showed that all men ( $n=9$ ) had radiotherapy due to prostate cancer and cervical cancer was the main cause in women group ( $n=4$ ). Due to the recurrence of the rectal bleeding six patients (46%) had a second plasma coagulation procedure performed. Three of them (23%) had endoscopic argon plasma coagulation, mainly because the damage was too proximal and unavailable to access through rectoscope. Mean hospital stay was  $4,47 \pm 8,83$  days. Generally patients had 1 to 2 bed-days, nevertheless 1 patient had 38 bed-days, since cancer progression was suspected and there was a need for further diagnosis assessment and treatment of concomitant diseases. We observed one complication in one patient: rectal mucous membrane necrosis developed after the procedure (7,69%). The patient had a surgery with a diverting colonic stoma and had his stoma reversed later with satisfactory results.

### Discussion

The incidence of RP after pelvic radiotherapy ranges from 2% to 20%. It becomes a challenge to both, patient and specialist. Patient suffers from a persistent symptoms and specialist cannot provide quick solution and treatment, since conservative treatment frequently proves to be ineffective and there is no evidence based consensus regarding the issue.

Radiation induced proctitis can improve over time even without treatment, so it should be taken into consideration when choosing approach to the issue.

What is important, and therefore *should be assessed*, is the type of RP. Acute RP occurs up to 3 months after initial

pelvic radiotherapy and proper hydration, antidiarrheal drugs should be taken into consideration if needed. P. Vernia et al. in the randomised- crossover trial showed that topical sodium butyrate, unlike other therapeutic regimens used so far, proved to be effective in the treatment of acute RP [6].

Symptoms occurring 3 months after radiotherapy are considered as chronic RP. There is a big choice of treatment modalities provided over time.

Local application with 4% formaline had been described in 1986 by Rubinstein et al. N.E.Samalavicius et al. in his prospective study stated that local irrigation with formaline under perianal anesthetic block is simple, safe, inexpensive, well tolerated and effective choice of the treatment.

Recently, argon plasma coagulation has become one of the preferred choices in dealing with the radiation induced proctitis [1]. Ramakrishnaiah et al. stated that both argon plasma coagulation and formalin are equally effective, yet formalin may be better in severe disease. According to Al-fadhli et al. argon plasma coagulation is significantly more effective and more safe in comparison to formalin application. However the study was limited by its retrospective nature [7]. Our personal experience show that formalin application and argon plasma coagulation can be equally important and complementary in the treatment of RP.

The evidence suggest that hyperbaric oxygen therapy may be useful in the treatment of RP by causing neovascularisation, enhancing angiogenesis and granulation tissue formation, and lastly by optimizing immune functions at the cellular level. Recent Cochrane review demonstrated there was a significantly increased chance of improvement or cure following hyperbaric oxygen therapy for RP [8].

Interestingly, Perroti et al. showed that tissue regenerative medicine using platelet derived growth factors can be promising choice of conservative treatment [10]. Thus there is a wide field for further research as many treatment modalities are available, however more data in the form of randomized trials is needed.

### Conclusions

There is no evidence-based consensus regarding treatment of RP. Treatment should be based upon the severity of symptoms. According to literature and our single centre experience argon plasma coagulation seems to be safe and effective choice, nevertheless formalin application can be used as complementary choice as well. There is a need of a further randomised trials regarding cryoblation, radiofrequency ablation, Nd:YAG laser and other modalities of the treatment. Surgery should be considered as the last resort choice.

**Conflict of interest:** none.

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**RADIACINIS PROKTITAS: GYDYMO ARGONO PLAZMOS KOAGULIACIJA ATVEJAI KLAIPĖDOS UNIVERSITETINĖJE LIGONINĖJE**

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Raktažodžiai: radiacinis proktitas, argono plazmos koaguliacija.

Santrauka

Radiacinė proktopatija yra tiesiosios žarnos pažeidimas, įtakotas radiacinio poveikio, su ar be audinių uždegimo.

Tikslai ir metodai. Studijos tikslas buvo pateikti mūsų klinikinę patirtį gydant pacientus su radiaciniu proktitu naudojant argono plazmos koaguliaciją. Atlikta pacientų, gydytų dėl radiacinio proktito Klaipėdos universitetinėje ligoninėje nuo 2014 iki 2017 metų, duomenų retrospektyvinė analizė. Statistinė analizė atlikta naudojant SPSS 20.0 statistinės analizės paketą.

Rezultatai. 13 pacientų atlikta argono plazmos koaguliacija. Moterų ir vyrų dažnis buvo 1:2,25, vidutinis amžius 70,69±13,51 metų. Visiems vyrams (n=9) atlikta radioterapija dėl nustatyto prostatos vėžio, o moterų grupėje (n=4) pagrindinė priežastis buvo gimdos kaklelio vėžys. Šešiams pacientams (46%) argono plazmos koaguliacija buvo atlikta du kartus. Trims pacientams (23%) atlikta endoskopinė argono plazmos koaguliacija. Vidutinis lovodienų skaičius buvo 4,47±8,83 dienos. Vienam pacientui pasireiškė tiesiosios žarnos gleivinės nekrozė (7,69%).

Išvada. Šiuo metu nėra įrodymais pagrįsto konsensuso dėl radiacinio proktito gydymo. Argono plazmos koaguliacija atrodo esanti saugi ir efektyvi gydymo galimybė, tačiau reikalingos tolimesnės ir išsamesnės studijos nustatyti, kuris metodas turėtų būti laikomas „auksiniu standartu“ radiacinio proktito gydyme.

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