

Staging of Radio-Induced Oral Mucositis

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Abstract: *The aim of this study is to present cases of oral mucositis (OM) in the different stages of patients previously diagnosed with malignant tumors in the maxillofacial region, gone through radiotherapy. The mucosal lesions may vary from transient to severe. They may be progressive, ongoing with opportunistic infections and worsening the general health. Oral mucositis has a direct influence on the quality of life. The importance for the general condition and functionality of the patient is to necessitate the stage and to build a therapeutic behavior. The staging scale of NCI-CTC with clinical and functional indicators is usually used. Oral mucositis have 4 stages. Each stage is determined by the lesion size of the mucosa and the patient ability to eat and drink fluids. Antiseptics, epithelotonic medications and a proper diet are recommended, after the stage of the oral mucositis is diagnosed. Antibacterial therapy is useful in cases of progression by opportunistic infection.*

Keywords: oral mucositis, radiation-induced mucositis, oral lesions

1. Introduction

The observations indicate that the clinical symptoms of OM begin with the application of the first dose of radiotherapy [[2]], [[5]], [[7]], [[8]]. The progression depends on the accumulation of ionizing radiation [[2]], [[15]]. The one-time focal dose is usually 2 Gy and total picture of oropharyngeal mucositis is observed 7-14 days after starting the treatment, at a cumulative dose 10-20 Gy [[2]]. The peak of the disease is revealed at a dose of 30Gy [[2]], [[7]], [[8]], [[9]], [[10]], [[11]]. The whole mucosa of the oral cavity and pharynx is erythematous and the presence of ulceration is observed [[9]], [[10]], [[11]], [[14]]. The ulcers are coated with a white, yellow, fibrinous, pseudomembranous coating and are often bleeding [[2]], [[11]]. Pain in the oral cavity and oropharynx and xerostomia are the leading complaints during the course of radiotherapy [[5]], [[15]]. Difficulty in feeding occurs in 90% of the tested patients, and weight loss in 85% of them [[7]], [[14]]. The colonization of microorganisms, bacteria, Candida, Herpes virus worsens the complaints and delays the healing process [[2]], [[6]]. It begins 2 to 3 weeks after treatment and it takes 3-6 months for the reparation of oral tissues [[2]].

Classification:

The most widely used staging system of oral mucositis is the scale of the National Cancer Institute in the US.

NCI-CTC (National Cancer Institute-Common Toxicity Criteria) [[4]]

Stage mucosal response

0 no mucositis without clinical symptoms

1 presence of erythema, painless ulcers, mild dryness

2 edema, mucosal ulcers, single pseudomembranes, nutrition and swallowing possible

3 edema, ulcers, confluent pseudomembranes, eating difficulty

4 necrosis or deep ulceration, spontaneous bleeding requiring parenteral or enteral nutrition

2. Clinical Cases

First stage

The patient was diagnosed with squamous cell carcinoma in the left parotid gland. He was referred to the department in Oncology Hospital to perform radiotherapy, followed a parotidectomy and cervical lymph node dissection. The total dose of radiotherapy was 60 Gy IMRT. After the seventh dose (14 Gy), the patient had complaints of dysgeusia, dry mouth and mild burning sensation. There was no difficulty in taking food and liquids.

There was a hyperemia of the oral mucosa in the mouth and single pseudomembranous plaques appeared. The test had revealed no changes in the acidity of the saliva and the microflora. First stage of oral mucositis was diagnosed. In this case no specific treatment was required, only oral rinses with chlorhexidine solution were recommended.

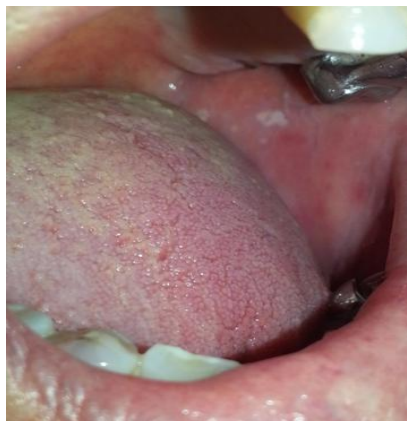


Figure 1: Oral mucositis in first stage

Second stage

The patient was referred to the Department of Oncology Hospital to conduct radiotherapy. The patient was previously diagnosed with tongue cancer. Hemiglossectomy and cervical lymph node dissection were performed. The total dose of followed radiotherapy was 60 Gy TGT. The clinical findings started 14 days after the beginning of the treatment and included pain in the mouth, xerostomia, dysgeusia, feeding difficulties but possibility of eating and speaking. Pseudomembranous plaques, smaller than 1.5 cm on erythematous field were revealed. Reduction of the saliva and acidity were observed. There were none pathogenic microorganisms. Second stage of oral mucositis was diagnosed.



Figure 2: Oral mucositis in second stage

Oral irrigations with chlorhexidine solution and chamomile infusion with sodium bicarbonate were prescribed. The intake of large amounts of fluids and a good oral hygiene was recommended.

Third stage:

A female patient was referred to the Department of maxillofacial surgery at the University Hospital "St. Anna" for consultation. She was previously diagnosed with squamous cell carcinoma of the floor of the mouth. She was inoperable. The radiotherapy started with daily dose of 2 Gy. After the second dose, the patient revealed a sore throat and a slight swelling of the neck. After the third dose the pain and the xerostomia increased. After the eighth fraction (16 Gy) the patient noticed white patches, burning sensation, bitter and pungent taste. She described the complaints through writing to minimize the speaking. The food and the fluid intake were graduated as difficult to impossible.

General condition

Extraoral observation showed hyperpigmentation of the skin of the neck and of the submandibular region, corresponding to the field of irradiation.

Intraoral findings were fetor, a dry and severe erythematous mucosa, wide, confluent white lesions and ulcers covered with pseudomembranous coating with size between 1 to 3 cm, on cheeks, lower surface and side edges of the tongue, lips, hard and soft palate, floor of the mouth. The patient complained of severe pain on palpation and bleeding from

some ulcers. The saliva was scarce, yellowish and highly viscous. Themicrobiological testing showed development of E. coli.

Diagnosis:

A heavy radio-induced mucositis in third stage was diagnosed.



Figure 3: Oral mucositis in second stage

Antibiotic treatment with Unazyn 3x325mg for 7 days, Diflucan 150 mg, for 3 days was prescribed. Oral irrigation with sodium bicarbonate solution and infusion of chamomile, gel containing lidocaine - Dentinoks-foranalgesia prior feeding was indicated. Frequent intake of food and fluids was recommended. The most suitable are soft, liquid foods, bananas and okra as natural lubricants and avoiding spicy foods as well as alcohol. Upon examination visible improvement was revealed. Lesions decreased in number and size, as well as the hyperemia. The infection was stabilized. The patient began to eat even through experiencing difficulties.

Fourth stage:

The female patient sought help at the Department of maxillofacial surgery at the University Hospital "St. Anna" because of a severe radiation reaction. The patient was previously diagnosed with squamous cell carcinoma of the tongue, of the floor of the oral cavity and of the pharynx, with the presence of cervical metastases. She was inoperable and was appointed IMRT with dose of 70 Gy. The peak of oral mucositis occurred at the 21st day of the therapy and dose of 40 Gy. The complaints were severe pain, burning, ageusia, impossibility to eat, to speak, to swallow. There were large sores on the lips and on the oral mucosa.

The intraoral mucosa was completely covered with pseudomembranes and necrotic areas. It was impossible for examination and palpation due to strong pain and bleeding plaques. A fourth degree of oral mucositis was diagnosed.



Figure 4: Oral mucositis in second stage

Antibiotic therapy with Augmentin 2x1000mg, for 7 days, Diflucan 150 mg, for 3 days, irrigation with infusion of chamomile and sodium bicarbonate, gel containing lidocaine -Dentinox - for use before eating was prescribed. The therapy was discontinued at the patient's request.

3. Discussion

Radio-induced oral mucositis is a severe condition that complicates the intake of food and fluids, social communication and tone and strongly impedes the normal functioning of the body [[2]], [[7]], [[8]], [[12]], [[13]]. The secondary infection by opportunistic microorganisms worsens the condition of the patient [[9]], [[10]], [[11]], [[14]]. The clinical findings are revealed immediately after starting radiotherapy, reaching its peak at a cumulative dose of 20-40 Gray [[2]], [[9]], [[10]], [[11]], [[12]], [[13]]. There is a correlation between the stage of mucositis and the type and the dose of the radiation, the field of irradiation and the general condition of the patient [[7]], [[12]].

4. Conclusion

Oral mucositis starts its clinical appearance immediately after the beginning of radiotherapy. Oral lesions may be transient without need of other treatment except local, oral care and proper diet. The severe forms of mucositis are painful conditions that lead to an impossible feeding and fluid intake. That requires discontinuation of radiotherapy, hospitalization for parenteral nutrition and management against secondary infection.

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