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ROLE OF MUCOSAMIN® IN THE PREVENTION OF MUCOSITIS IN PATIENTS UNDERGOING HAEMATOPOIETIC STEM CELL TRANSPLANT: CONTROLLED CASE STUDY

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INTRODUCTION:
Oral mucositis, also called stomatitis, is a multifactorial disease defined as "an epithelial thinning associated with intense erythema, ulceration, pain, bleeding, and increased risk of infection".
The cytotoxic effects of antineoplastic drugs on high turnover tissues such as the oral epithelium, and the local effects of radiation on the oral mucosa, are responsible for this manifestation, which significantly compromises the patient's quality of life. It is particularly manifested as a complication in patients who have undergone haematopoietic stem cell transplant (HSCT)
The most affected sites are the non-keratinised mucosa (floor of the mouth, buccal mucosa, labial mucosa and the tongue).
There is currently no effective protocol for its prevention.

PURPOSE:
This aim of this study is to assess the clinical effects of Mucosamin ® in the prevention and management of pain caused by oral mucositis following haematopoietic stem cell transplant.. Mucosamin® is a sodium hyaluronate preparation combined with a pool of amino acid collagen precursors, including L-Proline , L-Leucine , L-Lysine and Glycine. The importance of professional oral hygiene in reducing the severity of mucositis, as a single therapy or in addition to the Mucosamin® treatment, was also assessed.

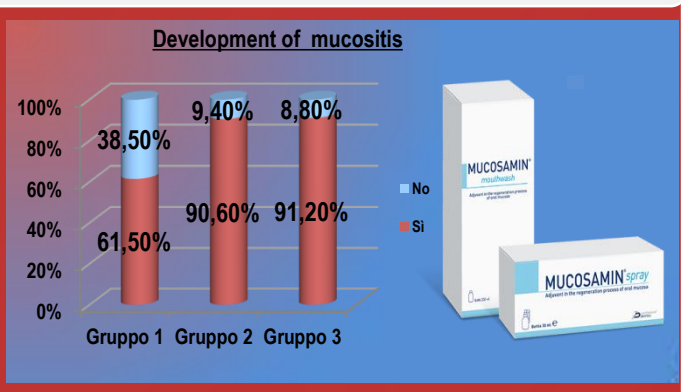
MATERIALS AND METHODS:
A case-control type of study was carried out on a sample of 101 patients. They were all recruited from the bone-marrow transplant list at the Oral Surgery Department of the Turin School of Dentistry.
They were then divided into 3 randomised groups
- GROUP 1: (33 patients): professional oral hygiene session and instructed to use Mucosamin® from the first day of admission;
- GROUP 2 (32 patients): professional oral hygiene session and standard treatment with 0.20% Chlorhexidine mouthwash
- GROUP 3 (34 patients): prescribed 0.20% Chlorhexidine only

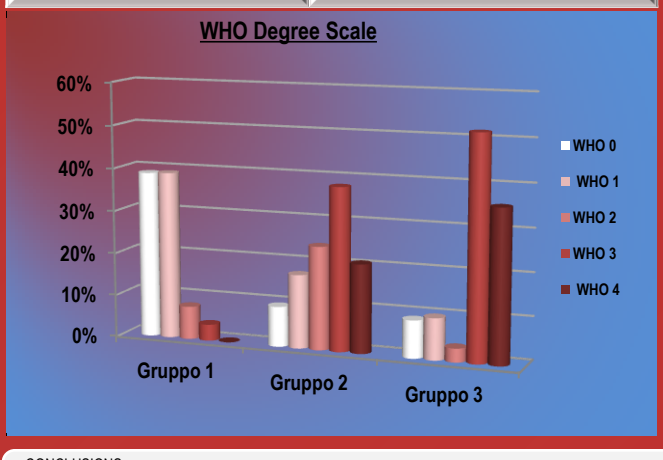
EVALUATION SYSTEMS
- WHO MUCOSITIS SCALE: 0 = no symptoms; 1 = pain, erythema; 2 = erythema, ulceration but able to eat solids; 3 = ulceration and the need for a liquid diet; 4 = oral feeding not possible
- OMAS Mucositis: (Ulceration 0 = no lesion; 1 = lesion <1 cm2; 2 = lesion from 1 to 3 cm2; 3 = lesion> 3 cm2; Erythema 0 = none; 1 = not severe; 2 = severe)
- PERIODONTAL PLATE: Plaque index. PSR bleeding index
- DURATION OF MUCOSITIS IN DAYS

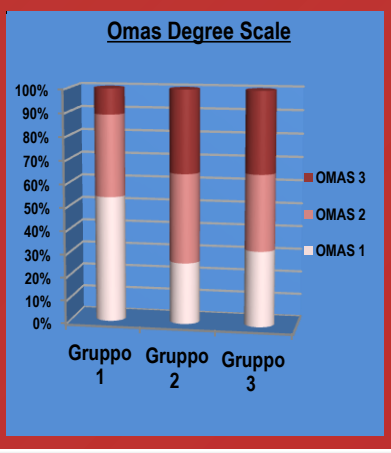
RESULTS:
The data showed that 81% of the entire sample developed oral mucositis; in particular there is a statistically significant difference with regard to the protective action of Mucosamin® as 38.50% of patients belonging to Group 1 have benefited. It has been shown thatt only 61.5% of the subjects belonging to Group 1 developed mucositis, against 91% of the remaining two groups. In particular, the results that derive from the WHO Scale are very interesting, as Group 1 showed a statistically significant prevalence of mild mucositis (39% WHO 1) compared to the other two groups that showed more cases of severe mucositis (52 % WHO3 and 35% WHO 4) (Group 1 vs Group 2 p-value 0.005; Group1 vs Group 3 p-value 0.003). These results are in agreement with those deriving from the OMAS Scale, in which Group 1 has the highest percentage of mild mucositis (54% OMAS 1) while Group 3 is the one that developed mucositis in the most severe form (51.6% OMAS 3). Analyzing the healing times most of the lesions were resolved altogether between 7 and 30 days, we highlight also in this case the adjuvant action of Mucosamin® as only Group 1 has as a maximum follow-up the value of 21 days .

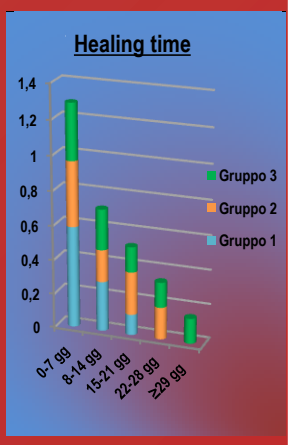
Group 1	WHO 1	14 patients out of 33 (41.3%)
Group 2	WHO 3	11 patients out of 34 (38%)
Group 3	WHO 3	16 patients out of 34 (51.6%)

Pvalue	Severe Degree (3+4 on the WHO scale)
Group 1 vs Group 2	0,0004
Group 1 vs Group 3	3,3 x 10 $^{-8}$









CONCLUSIONS:
This study allows us to conclude that the combination of proper oral hygiene during hospitalization and the correct use of Mucosamin® reduce both the onset of oral mucositis and, it appears, the severity of the latter, influencing consequently on the patient's discomfort, in a statistically significant way. The mouthwash in prevention and the spray in treatment, both based on hyaluronic acid and amino acids (Mucosamin®), can therefore be a valuable therapeutic aid for oral mucositis in patients undergoing HSCT.

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Prevention of oral mucositis in patients under going hematologous stem cell transplantation with mucosamin v. Bonino, M. caudera, S. Simiele, r. Pol, D. camisassa, M. carossa, l. giaccone, t. ruggiero

Department of Surgical Sciences, Oral Surgery Section, C.I.R. - Dental School, University of Turin, Turin, Italy BacKgroUnD: the purpose of the study is to evaluate the clinical effects of Mucosamin® (a spray preparation con taining sodium hyaluronate combined with a pool of amino acids of precursors collagen, including l-Proline, l-leucine, l-lysine and glycine), on prevention of wound healing and pain management of oral mucositis (oM) after hematopoietic stem cell transplantation (hSct). MethoDS: 101 patients undergoing hematopoietic Stem cell transplantation were recruited in a randomized clinical trial and divided into 3 groups: i) group 1 (33 patients): patients underwent a full session of professional oral scaling and root planning by dedicated hygienist; then they were instructed to use the Mucosamin mouthwash from the first day of hospitalisation and to recog nize the symptoms of oral mucositis and apply Mucosamin spray on these lesions 3-4 times a day after meals and oral hygiene, keeping it in situ for about 2 minutes avoiding drink ing, eating and rinsing the mouth for at least an hour. the same doctor controlled the patients during hospitalization to recognize initial and advanced signs of oM and to remind patients how to apply the compound. ii) group 2 (32 patients): patients underwent a full session of professional oral scaling and root planning by dedicated hygienist, these patients did not receive Mucosamin but the usual treatment with chlorhexidine 0.20%. iii) group 3 (34 patients): patients did not undergo a full ses sion of professional oral scaling and root planning by dedicat ed staff and did not receive Mucosamin but the usual treatment with chlorhexidine 0.20%. in addition, patients were asked whether they had undergone professional hygiene sessions in the 6 months before. the research systems used are: Who mucositis scale, oMaS mucositis scale, periodontal record ing, days of mucositis. reSUltS: group 1 subjects developed less cases of mucosi tis (61,5%) than other groups 81%. Furthermore group 1 shows a statistically significant prevalence of lighter mucositis than other two groups. (group 1 vs group 2 p-value 0,005, group 1 vs group 3 p-value 0,003).Between those who devel oped mucositis, group 1 shows a was a less severe grade of mucositis, Who 1 (41,3% - 14 patients), while group 2 had a more severe grade, Who 3 (38% - 11 patients) and group 3 shows a prevalence of more severe oM, Who 3 (51,6% - 16 patients). Furthermore, considering oMaS scale, group 3 developed more severe lesions. (group 2 vs group 1 p-value 0,0004, group 3 vs group 1 p-value 3,3 x 10-8). Most of the lesions disappeared in medium in 7 days, with a maximum of duration of more than 30 days; but in group 1 all lesions lasted 21 days maximum. conclUSionS: Mucosamin as prevention reduced inci dence of mucositis cases, statistically significant. in subjects with mucositis the product reduced lesions severity; in par ticular Mucosamin showed efficacy in severe grade lesions in a statistically significant way Finally, it can be stated that the use of Mucosamin also

results in a reduction in the extent of chemotherapy lesions. hyaluronic acid and amino acid-based sprays can be a valu able therapeutic aid in the treatment of oM.