

April Study of the Month

Effectiveness of zinc chloride mouthwashes on oral mucositis and weight of patients with cancer undergoing chemotherapy

Summary by Loreal Legare, 1st year CCNM Student

Introduction: Oral mucositis (OM) is a common side effect in patients undergoing chemotherapy. It affects patients' physical, mental and nutritional health and although it is common, there is no conclusive treatment option for it. Zinc chloride (ZC) has been shown to increase protein synthesis and improve cell membrane stability to possibly improve oral health. This study examined whether ZC would have a positive effect on the severity, prevention and incidence of OM in patients receiving chemotherapy.

Study Design: 3-week randomized, double-blind, placebo-controlled trial.

Population: 96 adults (48 ZC subjects, 48 placebo controls), aged 23-66 years, diagnosed with stage 1 or stage 2 cancer currently undergoing chemotherapy treatments (fluorouracil or mitoxantrone) without OM prior to starting chemotherapy

Intervention: Patients were randomly assigned into 2 groups; the ZC or placebo group. Both groups were instructed to thoroughly rinse their mouths with 7 mL of mouthwash for 2 minutes, wait 15 minutes, repeat a second time, then wait 8 hours and repeat. A preprepared mouthwash was used. Bottles were sequentially numbered and mouthwash was put in opaque bottles for blinding. The ZC group's mouthwash contained ZC 0.2%, greasy mint and preservative. The placebo group mouthwash contained greasy mint and preservative. Presence and severity of OM was followed up weekly, and weight was examined at baseline and a 3-week follow-up.

Outcome Measures: Development and severity measuring of OM using the World Health Organization OM grading scale. Weight of the patients was also assessed at the beginning and end of the trial.

Results: Prevalence grades of OM in the two groups showed a notable difference in the 3 weeks: ($p < 0.046$), ($p < 0.01$), and ($p < 0.01$), respectively. There was no OM present during the first week, one patient with grade 2 OM during week two, and two patients with grade 3 during week three in the ZC group. Additionally, patients' weight from baseline to week 3 showed a significant difference in the two groups; the ZC group having gained weight ($p = 0.039$), in comparison to the placebo group having lost weight ($p = 0.181$). This concludes that the ZC mouthwash improves oral health as well as significantly improves patients' weight, or nutritional health.

Oral mucositis grades between groups during this study

Mucositis grade	Zinc chloride group N (%)	Placebo group N (%)	p value
<i>Week 1</i>			
Grade 1	0 (0)	0 (0)	0.046*
Grade 2	0 (0)	0 (0)	
Grade 3	0 (0)	10 (20.83)	
<i>Week 2</i>			
Grade 1	0 (0)	0 (0)	0.01*
Grade 2	1 (2.08)	3 (10.34)	
Grade 3	0 (0)	7 (18.42)	
<i>Week 3</i>			
Grade 1	0 (0)	0 (0)	0.01*
Grade 2	0 (0)	0 (0)	
Grade 3	2 (4.16)	3 (10.34)	

Values are expressed as no. (%)
*Fisher exact test

Figure 1: Grades of OM between the two groups during the 3-week study.

Discussion: This study suggests that ZC mouthwash is effective in treating and preventing OM in patients undergoing chemotherapy, and improving patients' weight. This study showed a positive step towards improving chemotherapy side effects without requiring capsule medications, which can be difficult for patients due to nausea and difficulty swallowing. Limitations to the study include the small sample size, only using patients undergoing two types of chemotherapy and patients with a cancer stage of either 1 or 2. Future studies should explore this treatment with advanced cancer patients undergoing chemotherapy, as well as for a longer duration and additional demographics.

Would this treatment remain effective in preventing/relieving OM throughout a longer chemotherapy treatment period?

Reference:

Oshvandi K, Vafaei SY, Kamallan SR, Khazaei S, Ranjbar H, Mohammadi F. Effectiveness of zinc chloride mouthwashes on oral mucositis and weight of patients with cancer undergoing chemotherapy. BMC oral health. <https://www.ncbi.nlm.nih.gov/labs/pmc/articles/PMC8296564/>. Published July 22, 2021. Accessed February 23, 2022.

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