A randomised trial of topical polaprezinc to prevent oral mucositis in bone marrow transplant patients

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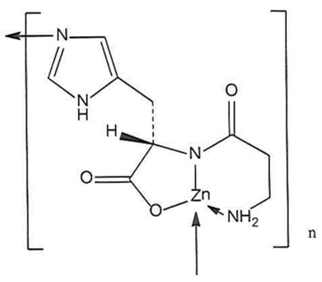
Background

Oral mucositis (OM) is a common complication in bone marrow transplant (BMT). Polaprezinc, an anti-ulcer drug, has been shown to be effective to prevent OM in several small studies using swish/ swallow administration.
(Kitagawa et al 2020, Watanabe et al 2010, Masayuki et al 2002)



$(C_9H_{12}N_4O_3Zn)_n : 289.61 \times n$

Aim

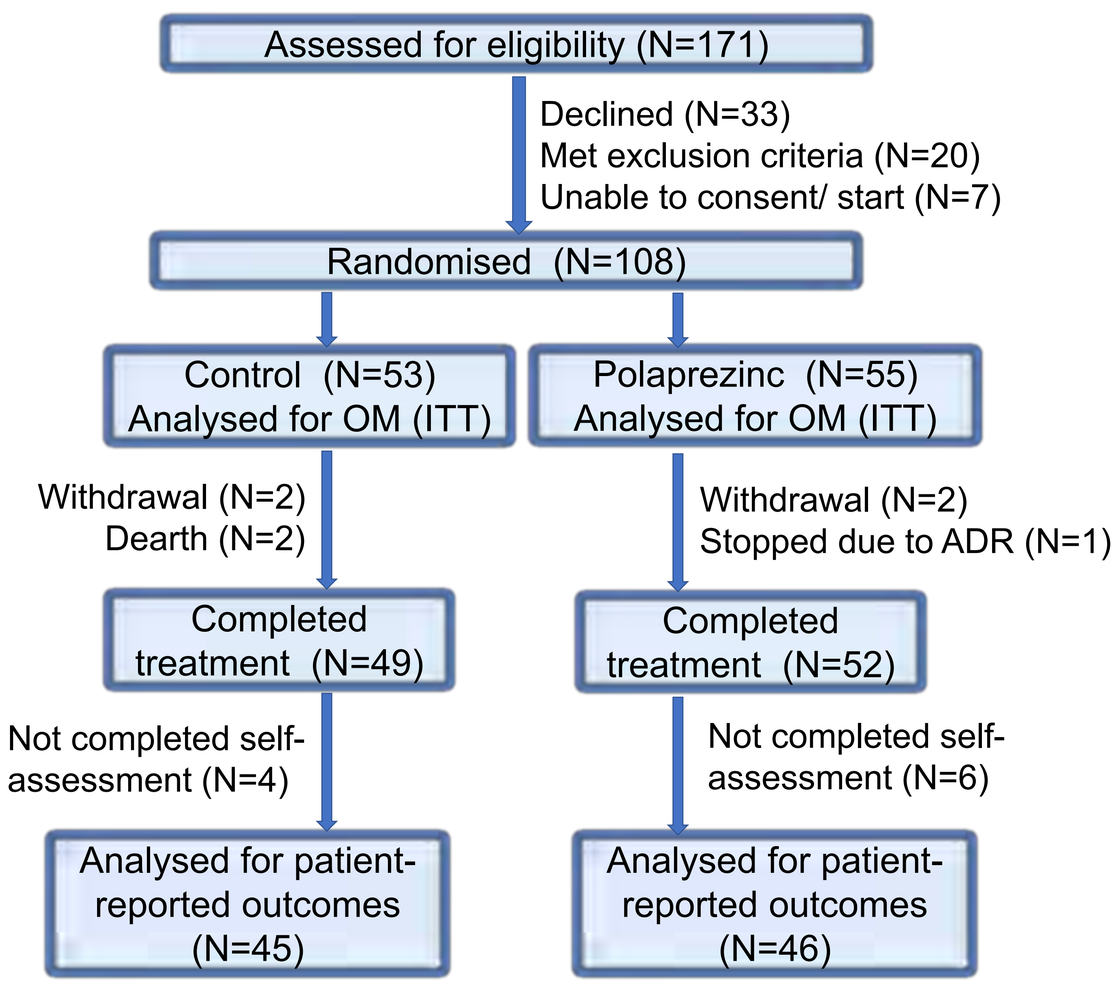
To evaluate the efficacy of topical polaprezinc (mouthwash: MW) to prevent oral mucositis in BMT patients

Methods

- This was a single centre phase II open label randomised controlled trial to evaluate the efficacy of polaprezinc mouthwash in the prevention of oral mucositis.
- Inclusion criteria: adult BMT patients undergoing allogeneic or autologous BMT following moderate to high risk conditioning (CyTBI, FluTBI, FluMel, BEAM and HDM)
- Patients were randomly assigned to control or test arm (1:1). Randomisation was stratified by conditioning
  Control: Saline MW → Sodium bicarbonate MW
  Test arm: Saline MW → Polaprezinc MW
- Primary outcome: incidence of WHO grade 3-4 OM
- Secondary outcomes: duration of grade 3-4 OM, incidence and duration of grade 2-4 OM, Use of PCA, use of nutrition supplement (TPN or enteral feed), patient-reported pain and functional limitation
- Statistics: Man-Whitney U Test or Fisher's Exact Test
- Ethics: HREC/2020/QRBW/68154
- Trial registration: ACTRN12320001188921

Results

Patients



Patients' demographics, disease and treatment

- All similar between the arms

	Sodium bicarbonate arm N=53	Polaprezinc arm N=55
Gender: Female (%)	19 (36%)	24 (44%)
Age: Median (range)	58 (20-70)	56 (21-72)
Diagnosis		
AML	16 (30%)	16 (29%)
ALL	10 (19%)	5 (9%)
Lymphoma	6 (11%)	10 (18%)
Myeloma	10 (19%)	11 (20%)
MDS	6 (11%)	9 (16%)
Other	5 (9%)	4 (7%)
Regimen		
CyTBI allo	10 (19%)	11 (20%)
FluMel allo	27 (51%)	26 (47%)
FluTBI haplo	2 (4%)	3 (5%)
BEAM auto	4 (7%)	4 (7%)
HDM auto	10 (19%)	11 (20%)
BMI: Median	29	27

Incidence and duration of OM, use of PCA& nutrition

variables	Sodium bicarb (N=53)	Polaprezinc (N=55)	p-values
Incidence of grade 3-4 OM	19 (36%)	19 (35%)	1
Duration of grade 3-4 OM*	5 days	6.5 days	0.42
Incidence of grade 2-4 OM	33 (62%)	40 (72%)	0.31
Duration of grade 2-4 OM*	5 days	7 days	0.53
Use of PCA (%)	16 (30%)	20 (36%)	0.54
Use of nutrition supplement	32 (60%)	35 (64%)	0.84

*Median duration among patient who had grade 3-4 / grade 2-4 OM)

Patient-reported pain score and functional limitation

variables	Sodium bicarb (N=45)	Polaprezinc (N=46)	p-values
Mouth and throat soreness*	37.5	41.875	0.29
Mouth soreness*	10	26	0.09
Throat soreness*	31	44	0.25
Swallowing*	18.5	17.5	0.52
Eating*	17.5	20.5	0.60
Drinking *	13.75	14	0.75
Talking*	5	8.5	0.50
Sleeping *	3.5	3.5	0.81

$p<0.05$ (Mouth soreness* vs Throat soreness*); $p<0.05$ (26 vs 44)

*Median AUC (sum of daily scales :10 points for pain, 5 points for function)

Conclusions

- Topical polaprezinc was not effective to prevent OM in BMT patients
- The difference from published data is likely due to administration (swish and spit vs swish and swallow). Further studies should focus on systemic administration.
- Patients reported more throat pain than mouth pain – throat mucositis is the main issue.

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