Carboxymaltose in the Treatment of Chemotherapy-Induced Anemia: An Effectiveness and Cost-Minimization Analysis

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Faculty Disclosure

X	No, nothing to disclose
	Yes, please specify:

INTRODUCTION

Fatigue
Cognition
Performance status
Adherence
Survival

2018
28-30 JUNE
VIENNA, AUSTRIA
SUPPORTIVE CARE MAKES EXCELLENT CANCER CARE POSSIBLE

- Anemia is highly prevalent in cancer patients ⇒ 30-90%[1,2]
- Iron deficiency is also highly prevalent in cancer patients ⇒ 32-60%[3,4]
  - Absolute ⇒ depletion of reserves
  - Functional ⇒ sequestration of reserves

  → Reduction of iron availability[5]
- Treatment of chemotherapy-induced anaemia (CIA):

  Red blood cells (RBC) and/or iron ± erythropoiesis-stimulating agents (ESA)[1]
  - ESA and blood transfusion: may increase mortality[6]
  - Intravenous (IV) iron can improve Hb levels and reduce RBC requirements[7]
  - 2 formulations of IV iron: iron sucrose and ferric carboxymaltose (FCM)[7]

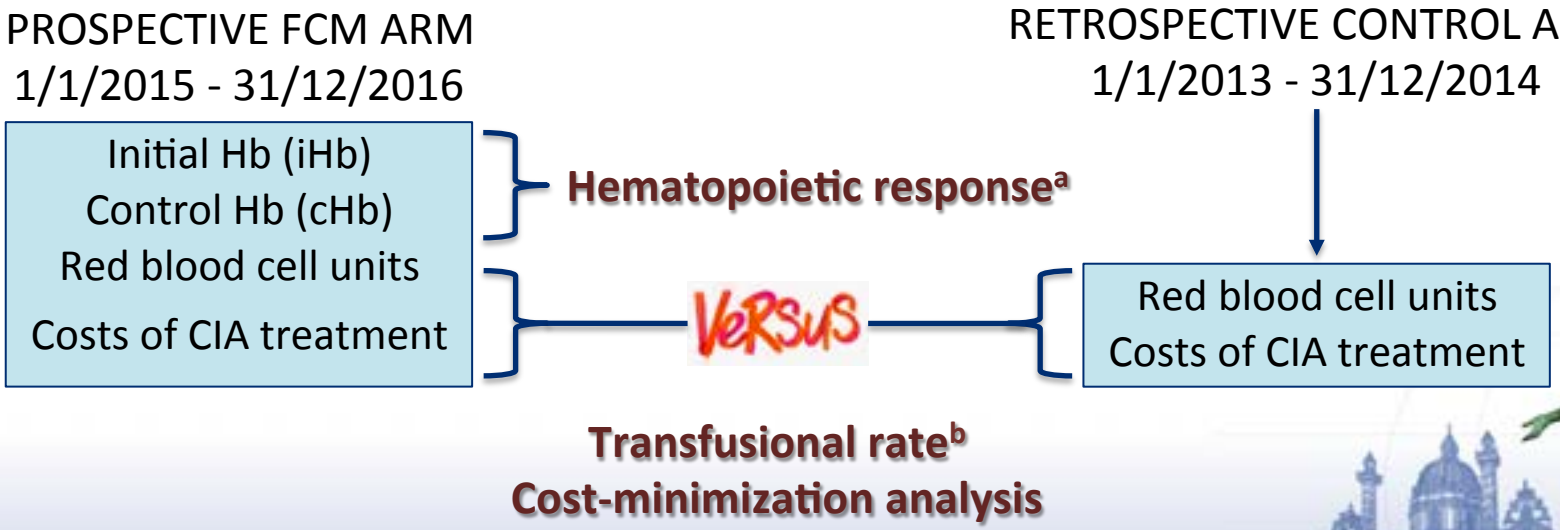
- Administration of a big dose of iron in a single infusion
- Similar efficacy and lower economic impact
- However, it has not been prospectively evaluated

[1]Appro M(2018);Esmo Guidelines. [2]Macciò A(2014);Haematologica. [3]Naoum FA(2016); Rev Bras Hematol Hemote. [4]De Castro J(2014);Clin Transl Oncol. [5]Lebrun F(2017);Support Care Cancer [6]Schrijvers D(2010);ESMO Guidelines. [7]Steinmetz(2013);

OBJECTIVES

- To assess the effectiveness of FCM in the treatment of iron-deficient CIA in patients diagnosed with solid tumours
- To evaluate the economic impact of FCM protocol

METHODS

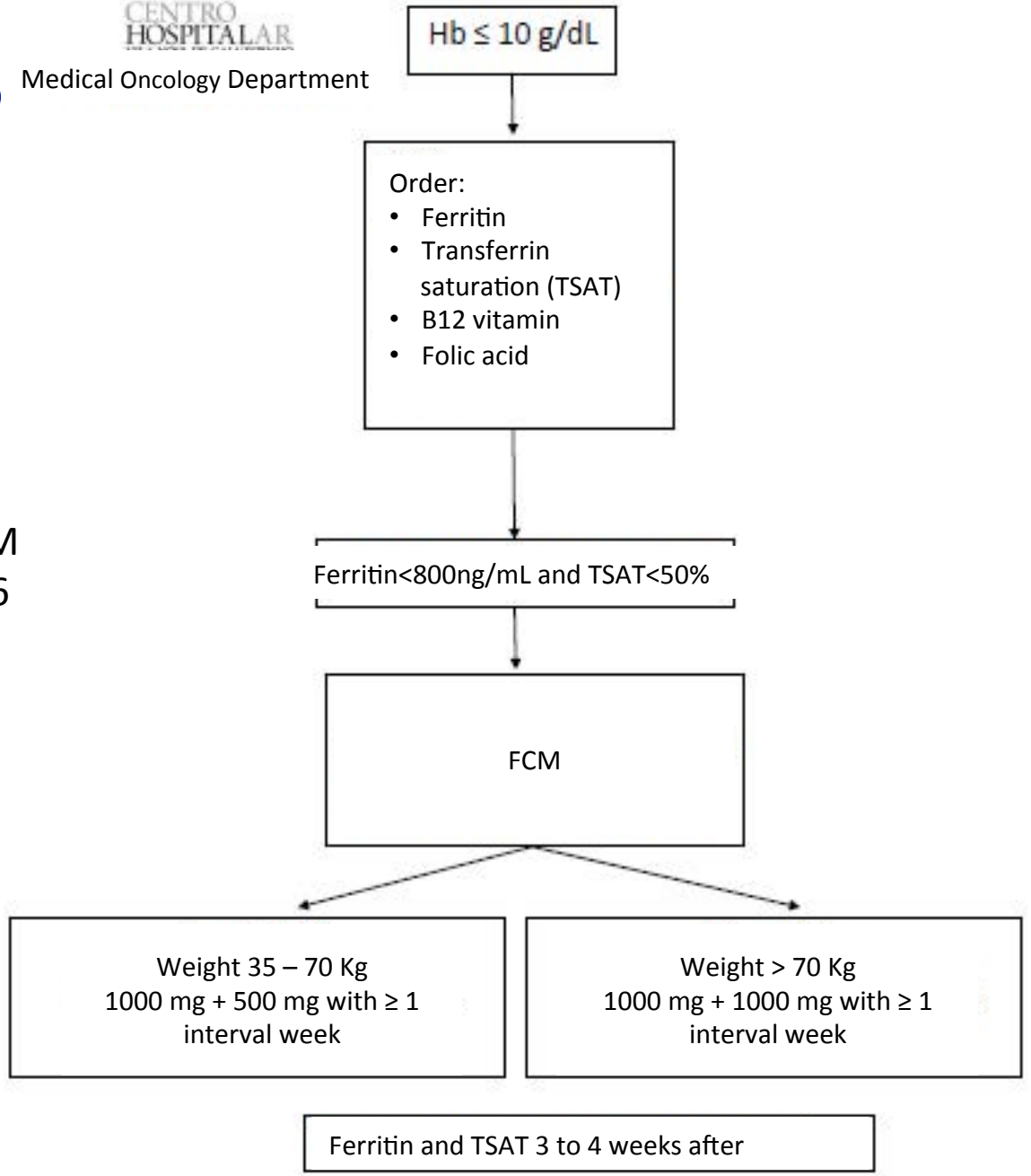


[a]Positive haemoglobin variation 4 weeks after the FCM treatment; [b]Transfusional rate: number of red blood cell units per chemotherapy treatment

METHODS

Medical Oncology Department

PROSPECTIVE FCM ARM
1/1/2015 - 31/12/2016



RESULTS

PROSPECTIVE FCM ARM
1/1/2015 - 31/12/2016
N=99

. Baseline patient ase characteristics).

Variables	Ferric Carboxymaltose group
Age (years, median, IQR[a])	66 ± 16
Gender	
Male (n)	49
Female (n)	50
Intention treatment	
Curative (n)	45
Palliative (n)	54
Iron Deficiency	
Absolute (n)	18
Relative (n)	81
Cancer type	
Colorectal (n)	22
Gastric (n)	22
Breast (n)	21
Pancreas (n)	11
Gynecological (n)	7
Lung (n)	4
Others[b] (n)	12

Baseline and post-treatment Hb levels.

Variables	Carboxymaltose gr
Baseline Hb (g/dL)	
Mean, SD[a]	9.2 ± 0.8
Min-Max[a]	6.7 – 10.8
Post-treatment Hb[b] (g/dL)	
Mean, SD[a]	10.6 ± 1.3
Min-Max[a]	7.8 – 14.2
***p value* (Baseline vs post-treatment Hb)**	<0.0001

[a] Abbreviations: SD – standard deviation; Min – Minimum; Max – Maxi

[b] Hb value at follow-up visit during week 4.

[c] Data were analyzed by paired t-test. The significance level was consid

Hematopoietic response: 84 (84.8%)
Response ≥ 2g/dL: 23 (23.2%)

RESULTS

PROSPECTIVE FCM ARM
1/1/2015 - 31/12/2016

VERSUS

RETROSPECTIVE ARM
1/1/2013 - 31/12/2014

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Transfusions and FCM infusions.

	Control group (2013 – 2014)	Ferric Carboxymaltose group (2015 – 2016)
Patients (n)	1732	1811
ChT[a] cycles	12322	13221
Number of transfusions	194	189
RBC[a] units	657	517
Patients treated with FCM	0	99
Total FCM vials	0	319
Transfusion per patient (%)	11	10
Transfusional rate[b] (%)	5.3	3.9

[a]Abbreviations: ChT – Chemotherapy; RBC – red blood cell; FCM – ferric carboxymaltose.
[b]Number of RBC units per chemotherapy session.

RR 0.84
(CI 0.74-0.94)

RESULTS

PROSPECTIVE FCM ARM
1/1/2015 - 31/12/2016

VERSUS

RETROSPECTIVE ARM
1/1/2013 - 31/12/2014

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Global treatment costs (red blood cell transfusions + FCM treatment) and cost-effectiveness of FCM treatment (per patient and chemotherapy cycle).

	Control group	Ferric Carboxymaltose group
Transfusions[a]	126 144,00 €	99 264,00 €
Ferric Carboxymaltose[b]	-	32 562,40 €
Total costs	126 144,00 €	**131 826,40 €**
Total cost **per patient**[c]	72.83 €	72.79 €
Total cost **per ChT cycle**[c]	10.24 €	9.97 €
Incremental cost **per patient**	-	**- 0.04€**
Incremental cost **per ChT cycle**	-	**- 0.27€**

[a]Unitary cost of transfusion (administration+ RBC unit) = 192€.
[b]Unitary cost of FCM treatment (administration + vial) = 121.20€.
[c]Costs were calculated considering the total number of patients and chemotherapy cycles described in table 2.

CONCLUSIONS

- We showed prospectively that the FCM treatment was effective in 85% cancer patients with CIA of grade ≥2 and iron deficiency.
- Our results showed a significant reduction in the percentage of cancer treatments that needed RBC support in the FCM arm
- The cost minimization analysis was favorable: direct cost saving was achieved in the FCM treatment group, which can be explained by the reduced need for transfusions.
- As far the indirect costs:
  - Health care perspective: savings in time booked at ambulatory clinic and in number of RBC units
  - Patient's perspective: less hospital visits and work absences, cost savings with transportations, among others.

Thank you for the attention