Evaluation of antiemetic prescribing in paediatric bone marrow transplantation

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Background

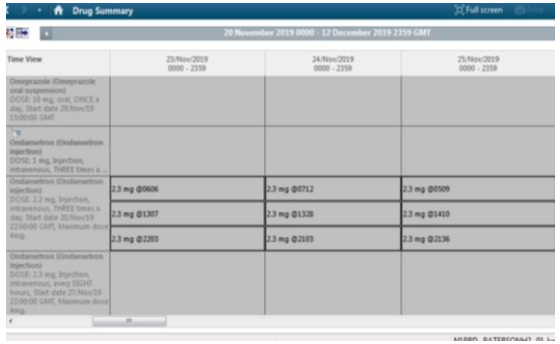
Primary immunodeficiencies (PID) are a group of disorders in which genetic mutations result in a defective immune system. Bone marrow transplantation (BMT) can offer a permanent cure; only 2 hospitals in England currently offer BMT for paediatric PID patients. Prior to BMT, patients must undergo conditioning with cytotoxic drugs. This often causes nausea and vomiting which can impair quality of life, so control using antiemetic drugs is important.

Project aim: to ensure optimum prescribing of anti-emetics in children undergoing BMT.

Methodology

1) Paediatric patients who had undergone BMT at the trust's BMT unit within the past 3 years were identified; 27 patients in total were used.

2) Erecord's "drug summary" was used to view the anti-emetic drugs prescribed and administered for each patient from day -8 pre-transplant to +14 post-transplant.



3) The day prescribed and dose was recorded in a spreadsheet as shown. Ondansetron, cyclizine, hyoscine, levomepromazine and lorazepam were looked at.

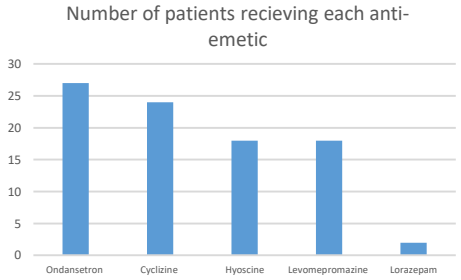
Antiemetic	Day	Dose	Antiemetic	Day	Dose	Antiemetic	Day	Dose	Antiemetic	Day	Dose
Ondansetron IV	-8	2.3mg TDS	Cyclizine IV	1	5mg TDS	Hyoscine pat	4	0.25 patc	Levomepromazine	4	1mg QDS
Ondansetron IV	-8	1mg TDS				hyoscine pat	-2	0.25 patc			
Ondansetron IV	-8	1.6mg TDS	Cyclizine IV	10	6mg TDS	Hyoscine pat	10	0.25 patc			
Ondansetron IV	-7	4mg TDS	Cyclizine IV	-1	25mg TDS	Hyoscine pat	3	0.5 patch	Levomepromazine	1	1.9mg QD
Ondansetron IV	-7	1.5mg TDS	Cyclizine IV	6	5mg TDS				Levomepromazine	7	200mcg Q
Ondansetron IV	-8	8mg TDS	Cyclizine IV	-2	50mg TDS	Hyoscine pat	1	1 patch e	Levomepromazine	-1	2mg QDS
Ondansetron IV	-8	1.6mg TDS	Cyclizine IV	0	6mg TDS	Hyoscine pat	10	0.25 patc	Levomepromazine	1	200mcg TI
Ondansetron IV	-8	1.8mg TDS									

4) Microsoft Excel was used to analyse the findings.

Results and Discussion

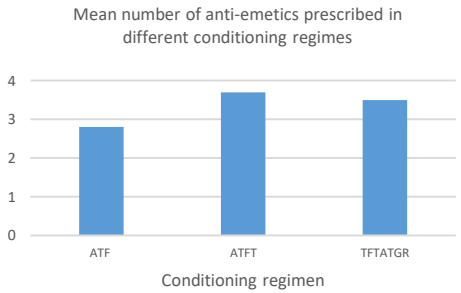
Choice of anti-emetic:

Ondansetron was always prescribed first on D-8 or D-7. Cyclizine was prescribed for 89% of patients and was used 2nd line in all but one of these. Levomepromazine and hyoscine were then prescribed 3rd and 4th line inconsistently. Lorazepam was only used in 2 patients.



Dosing:

Dosing of ondansetron and hyoscine were consistent and followed BNF dosing. 70% of patients who received cyclizine were started at the maximum dose; almost half of those started on a lower dose were later increased to maximum. Starting dose of levomepromazine was highly inconsistent.



Conditioning regimen:

Patients conditioned with alemtuzumab/treosulfan/ fludarabine (ATF) required fewer antiemetics on average than those conditioned with a regimen containing thiotepa. This is likely because thiotepa has very high emetogenicity.1

Conclusion

Recommendations made to improve antiemetic prescribing included:
- Starting cyclizine earlier and starting on maximum dose
- Prescribe maximum doses before moving onto next anti-emetic
- Prescribing more anti-emetic drugs prophylactically for more intense conditioning regimens

Further work to be carried out is to create and implement a protocol for anti-emetic prescribing and to re-audit in the future using a larger patient sample.

1 https://foi.avon.nhs.uk/Download.aspx?r=2&did=22478&f=Antiemetics%20Guidelines%20For%20Paediatric%20Patients%20Rec-1_4.pdf