Impact of Clinical Pharmacist-Vancomycin Monitoring on Patient Safety Outcome

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Introduction

-Vancomycin is frequently used to treat gram-positive infections especially methicillin resistant staphylococcus aureus (MRSA).

-Some of the adverse events that are well known to be associated with the use of vancomycin are infusion-related reactions specially “red man” or “red neck” syndrome associated with rapid infusion, nephrotoxicity and ototoxicity (2).

-It is recommended to maintain vancomycin serum level >10 mg/L to achieve successful therapy and avoid prolongation of treatment therefore prevent the development of resistant strains (4, 5).

Objectives

-The aim is to study the difference between clinical pharmacist-based vancomycin monitoring versus physician-based vancomycin monitoring in terms of safety outcome of vancomycin therapy.

Method

-This is an observational retrospective cohort study that was conducted at King Fahad Medical City (KFMC), Riyadh, KSA, starting in September 2014. The patients were distributed into physician group and clinical pharmacist group depending on who did the monitoring for vancomycin.

Inclusion criteria:
1.Male and female age more than 18 years.
2.Any patient started on vancomycin intravenously for >24 hours for suspected or proven infection during admission or hospital stay.

Statistical Analysis:
-Categorical variables were presented as numbers and percentages. Continuous variables were expressed as Mean ± S.D. Independent sample t-test, Person’s Chi-square and fisher exact test were used according to the data type.

Outcomes

Primary outcomes:
•Nephrotoxicity
-Defined as a rise in serum creatinine concentration of >0.5 mg/dL or ≥50% increase from baseline on two consecutive days (5).

Secondary outcomes:
•Proper initial dosage regimen.
•Proper sampling time.
•Proper interpretation of trough vancomycin levels.
•Other adverse reactions such as red man syndrome and anaphylactic reactions.
-The secondary outcomes were evaluated according to KFMC vancomycin monitoring protocol.

Results

Table 1. Baseline Characteristics.

	Physician Group (n=53)	Clinical Pharmacist Group (n=47)	P. value
Mean Age (Year)	49.53 ± 21.50	54.85 ± 20.38	0.209
Gender			
Male	27 (50.9%)	26 (55.3%)	0.692
Female	26 (49.1%)	21 (44.7%)	
Mean SCr (umol/L)	49.10 ± 26.01	40.4 ± 23.13	0.082
Mean CrCl (ml/min)	36.33 ± 27.46	35.80 ± 23.91	0.920
Mean duration of therapy (Days)	7.91 ± 4.84	10.47 ± 10.72	0.120

n: Number of patients; SCr: Serum Creatinine; CrCl: Creatinine Clearance

Chart 1. Indication of Vancomycin (Percentage)

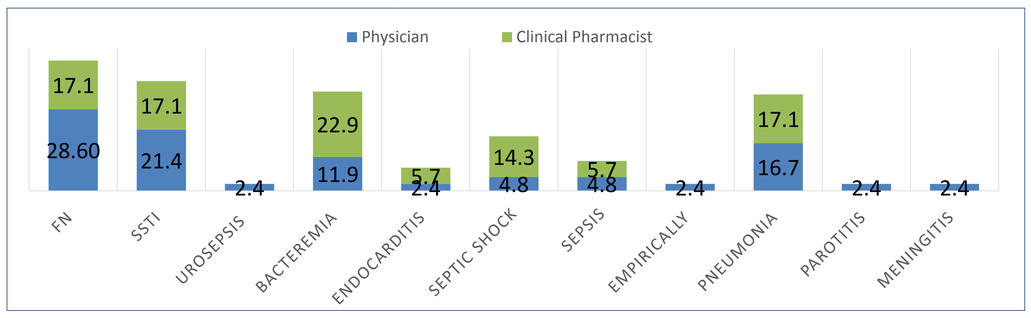


Chart 2. Primary and Secondary Outcomes (Percentage)

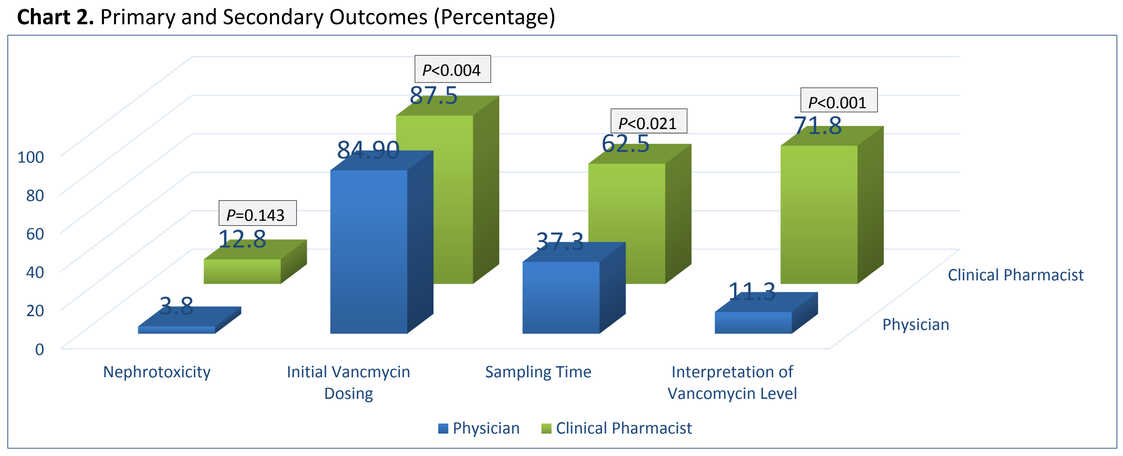


Chart 3. Concomitant Nephrotoxic Medications (Percentage)

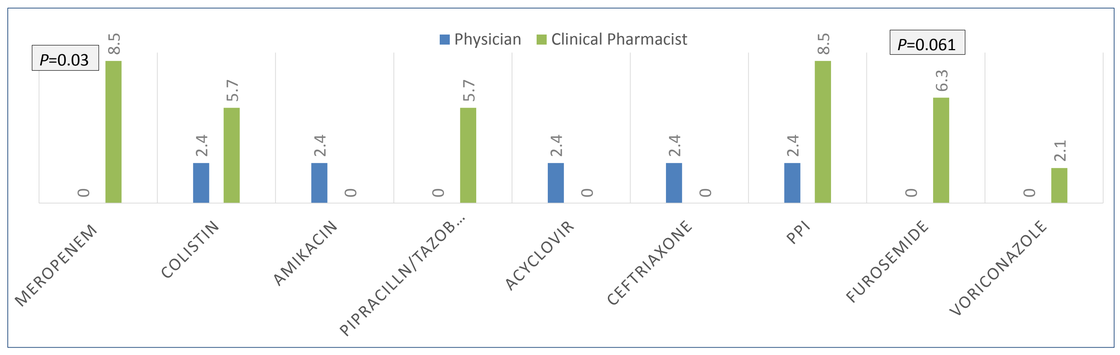
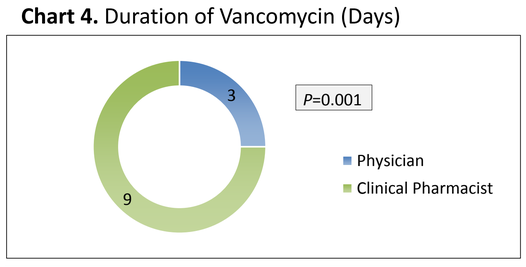


Chart 4. Duration of Vancomycin (Days)



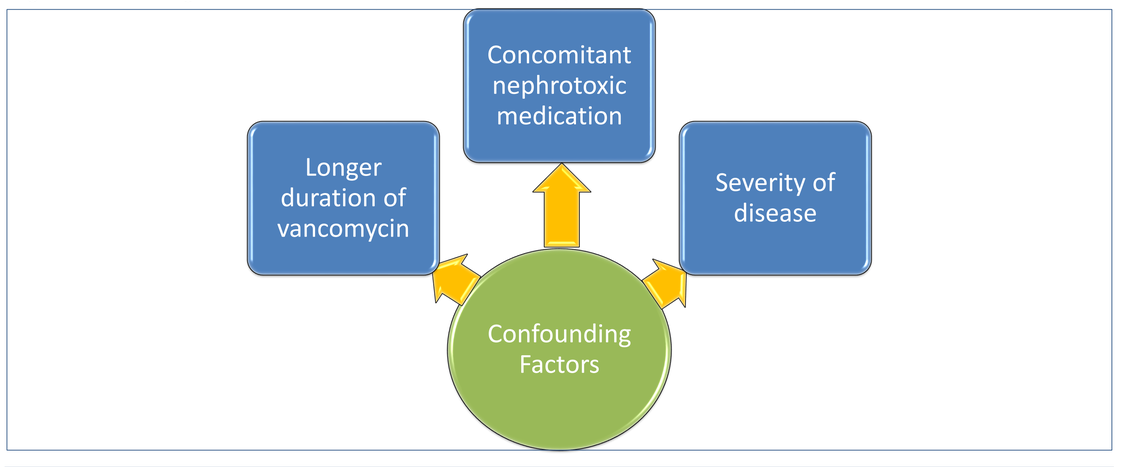
No other adverse reactions were reported with the use of vancomycin.

FN: Febrile Neutropenia; SSTI: Skin & Soft Tissue Infection; PPI: Proton Pump Inhibitor

Discussion

Many confounding factors that led to the increased rate of nephrotoxicity in clinical pharmacist group (Figure 1.).

Figure 1. Confounding Factors for the Development of Nephrotoxicity in Clinical Pharmacist Group.



Conclusions

-This retrospective study concluded that there is non-statistically significant higher rate of nephrotoxicity in vancomycin patients monitored by clinical pharmacists compared with those monitored by physicians.

-Other secondary outcomes were significantly favoring the clinical pharmacist group. No other adverse reactions reported in both groups.

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http://www.eahp.eu/24-4CPS-044

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