THE ROLE OF ADMINISTRATION ROUTE IN ACHIEVING THERAPEUTIC VORICONAZOLE PLASMA LEVELS

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BACKGROUND AND IMPORTANCE

Voriconazole, used for severe fungal infections, can be administered orally or intravenously (IV). The choice of route may impact plasma concentrations, critical for balancing therapeutic efficacy and avoiding toxicity. Comparative data on pharmacokinetic outcomes between oral and IV administration remain limited.

AIM AND OBJECTIVES

To compare plasma concentrations of voriconazole between oral and IV routes and to assess the factors influencing the likelihood of achieving suboptimal, therapeutic, and toxic levels.

MATERIAL AND METHODS

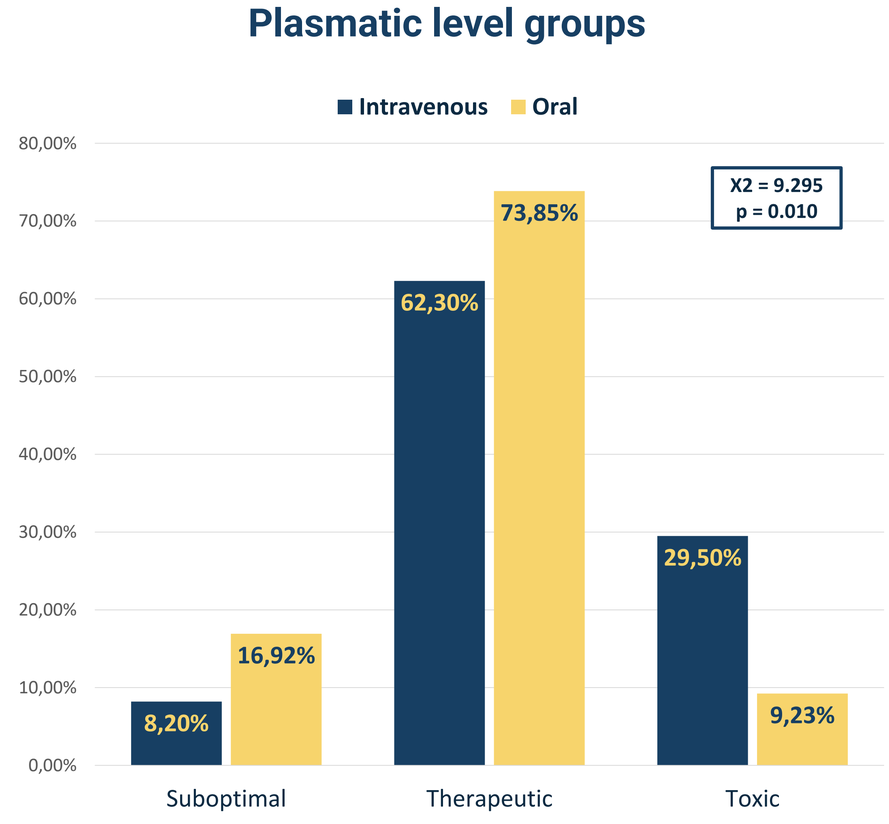
Design	Retrospective observational study	**Plasma levels**	Suboptimal (<1 µg/ml), Therapeutic (1-5.5 µg/ml), Toxic (>5 µg/ml)
Population	Voriconazole-treated patients (May 2021 - Oct 2024)	**Statistics**	Spearman correlation, Chi-squared, Mann-Whitney U, Multinomial logistic regression
Variables	Age, gender, administration route, dose, plasma levels, BMI, enteral nutrition, omeprazole intake	**Software**	SPSS v29.0

RESULTS

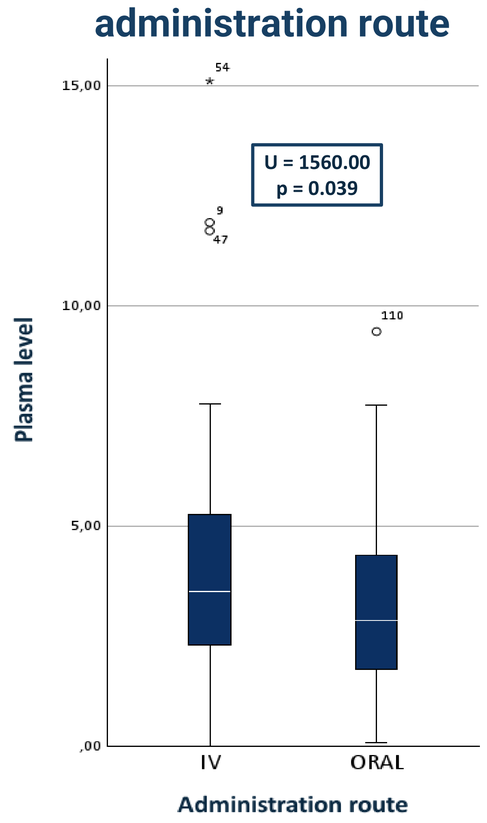
Population Characteristics

	IV (n = 61)	Oral (n = 65)
Gender (male)	40 (65.6%)	43 (66.2%)
Age (years)	63 ± 15	64 ± 15
BMI (kg/m2)	28.01 ± 9.33	27.08 ± 6.28
Enteral nutrition	22 (36.1%)	4 (6.2%)
Omeprazole	58 (95.1%)	49 (75.4%)

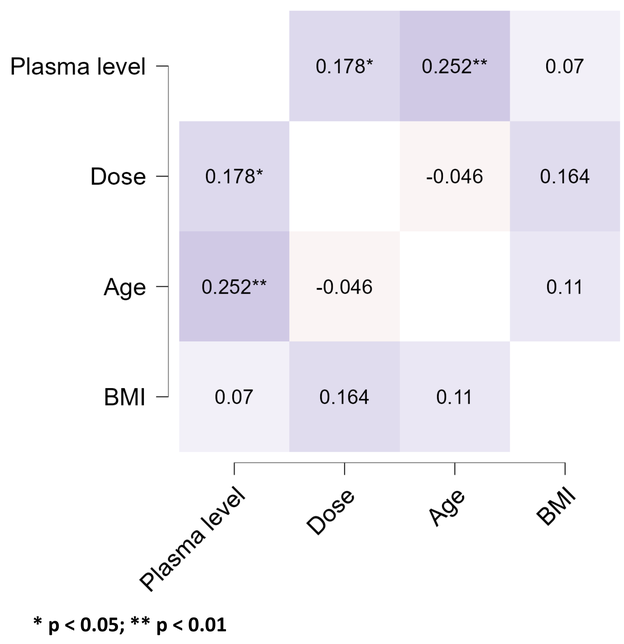
Plasmatic level groups



Plasmatic levels by administration route

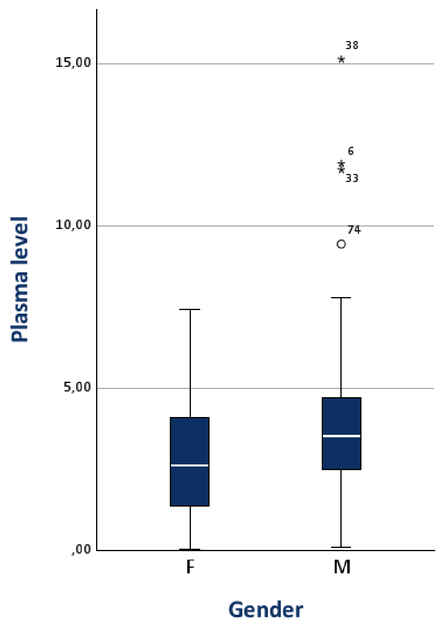


Spearman correlations



* p < 0.05; ** p < 0.01

Plasmatic levels by gender



Multinomial logistic regression model comparing to toxic interval

		B	ED	Wald	df	p	OR (95% CI)
Suboptimal	Dose	-0.003	0.006	0.374	1	0.541	0.997 (0.985 - 1.008)
	Age	**-0.071**	**0.026**	**7.344**	**1**	**0.007**	**0.932 (0.885- 0.981)**
	Gender	1.280	0.751	2.903	1	0.088	3.596 (0.825 - 15.676)
	IV vs Oral	**-1.764**	**0.897**	**3.872**	**1**	**0.049**	**0.171 (0.030 - 0.993)**
Therapeutic	Dose	0.000	0.003	0.005	1	0.945	1.000 (0.993 - 1.006)
	Age	-0.035	0.020	3.240	1	0.072	0.965 (0.929 - 1.003)
	Sex	-0.064	0.537	0.014	1	0.904	0.938 (0.327 - 2.6869
	IV vs Oral	**-1.442**	**0.616**	**5.481**	**1**	**0.019**	**0.236 (0.071 - 0.791)**
Nagelkerke R^2 = 0.214, p < 0.001							

CONCLUSION AND RELEVANCE

IV voriconazole results in higher plasma concentrations and an increased risk of toxicity compared to oral administration. Age and male sex are significant factors affecting levels. Careful monitoring is advised, especially in older and male patients receiving IV therapy

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