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CENTRAL AND PERIFERIC PROSTATE DIFFUSION OF FOSFOMYCIN TROMETAMOL IN MEN WITH OR WITHOUT METABOLIC ABNORMALITIES

Hypothesis / aims of study

Current evidences show that men with abnormal metabolic parameters are at major risk of harboring a more aggressive prostate cancer [1]. Despite the increased risk of post-procedure complication, infections included, this is the cohort of patients for which prostate biopsy will be particularly useful. Precisely for this reason prophylactic antibiotics in these patients, before they underwent prostate biopsy, plays a predominant role. Fosfomycin trometamol (FT) is a bactericidal, broad-spectrum antibiotic with low profile of resistance and elevated activity against multidrug-resistant bacteria. It is well known FT' urinary distribution but about prostate diffusion in literature [2] there are only few and old works and none in patients with Metabolic syndrome (METs). This prospective study focuses on the diffusion proprieties of FT in prostatic tissue by comparing its concentration in men with different metabolic abnormalities.

Study design, materials and methods

: FT was administered 3 to 6 hours before procedure to sixty men with suspected prostate cancer. The diffusion of FT was calculated analyzing the concentration differences in the cores obtained from peripheral and from central prostate biopsies (central zone [C] and peripheral zone [P]). The arithmetic mean of C and P was considered as total prostatic concentration (T). Metabolic features including waist circumference, arterial blood pressure, glycemia, HDL-Cholesterol and triglyceride were recorded in all men. Each obtained value was split into normal or pathologic according to NCEP-ATPIII criteria. The variations of FT concentration among different zones of the gland (C, P and T) and men with or without abnormal metabolic parameters were analyzed by Anova.

Results

Over all patients, thirty-one (51.7%) suffered from hypertension, nineteen (31.7%) presented hyperglycemia, twenty-one (35%) were classified with high levels of Triglycerides while two (3.3%) with low levels of HDL-Cholesterol. Ten (16.7%) had a pathologic waist circumference. The table below reports the mean value of FT concentration in different zone of prostate (C, P, T) according to the normal vs abnormal metabolic features.

Interpretation of results

In literature it is known as METs is correlated with various diseases: oncological, non-oncological and infectious. As also evident in the literature, patients undergoing prostate biopsy, if not treated with appropriate prophylactic antibiotics, are at risk for infectious complications sometimes with series sequele. Especially in patients affected from metabolic disorders, which exhibit increased susceptibility to infection, it is important a suitable prophylactic coverage with a low resistance to common uropathogenic bacteria and broad spectrum antibiotic. FT, a chemoterapic with the mentioned characteristics, in our study seems to be spreading adequately in prostate tissue as to be used in the prophilaxis of prostate biopsy. Moreover it seems to have higher distribution in prostate of patients with diabetes, hypertension dyslipidemia. This evidence could lead to hypothesize that if on one hand the diabetic patients have higher infection risk, on other hand they have at the same time higher concentration of FT in our target tissue. It could be explained as dysmetabolic patients have a generalized inflammatory state that, in the prostate, could increase distribution of fosfomycin in the tissue, making it a suitable drug also for patients suffering from METs.

Concluding message

FT shows a higher concentration rate in the prostate gland of obese, hypertensive and hyperglycemic patients compared to those with non-altered metabolic parameters. For this reason FT can be considered an effective prophylaxis before performing a prostate biopsy, particularly in dysmetabolic men.

		Central	Peripheral	Total
Blood pressure	Normal	9.02	7.35	8.15
	Pathologic	13.09	12.97	13.03
	p value	***0.032***	***0.008***	***0.010***
Glycaemia	Normal	10.04	9.16	9.57
	Pathologic	14.03	12.65	13.34
	p value	***0.033***	*0.080*	***0.037***
Triglycerides	Normal	11.29	10.44	10.87
	Pathologic	12.19	11.17	11.58
	p value	0.636	0.731	0.705
HDL-Cholesterol	Normal	11.5	10.59	11.01
	Pathologic	15.97	15.05	15.51
	p value	0.376	0.437	0.379
Waist Circumference	Normal	11.10	9.54	9.79
	Pathologic	16.27	14.32	15.29
	p value	***0.010***	*0.089*	***0.026***

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