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BACTERIAL PRESENCE IN PROSTATE INCREASES NON-MALIGNANT PROSTATIC FLUORODEOXY GLUCOSE (FDG) UPTAKE ON POSITRON EMISSION TOMOGRAPHY /COMPUTED TOMOGRAPHY (PET/CT) IN PATIENTS WITH NON-UROLOGICAL SYMPTOMS

Hypothesis / aims of study

Patients with incidentally found prostatic F-18 fluorodeoxy glucose (FDG) uptakes in positron emission tomography /computed tomography (PET/CT) were referred to urologists to characterize the significance. While malignancy and infection are two commonly suggested etiologies for increased FDG uptake, only few patients of incidental prostate FDG uptake (IPU) revealed prostate cancer and the study for chronic infections through a strict localization test is not reported yet [1-3]. Therefore, we evaluated the association between prostate infections and the IPU in non-malignant prostate tissues.

Study design, materials and methods

Only 51 men from 7,493 men who underwent FDG PET/CT scanning for six years agreed to physical prostate examination and expressed prostatic secretion (EPS) test within two weeks after FDG PET/CT scans. We examined the prostate infection by using a modified a two-glass test (pre-massage urine and 100 μL of EPS). We routinely performed prostate biopsy if presence of prostate nodule and high serum prostate-specific antigen level (≥ 4ng/mL) in both of initial and follow-up. Five men were pathologically diagnosed with prostate cancer, and excluded from this study. We reviewed FDG PET/CT scan in en-rolled patients, calculated the maximum standardized uptake value (SUVmax) in prostate and evaluated the relationship between FDG PET/CT and clinical and laboratory features for prostate diseases.

Results

Clinical features and the results of FDG PET/CT were described in Table 1. The mean SUVmax values were 3.58 ± 1.54 in the IPU group and 1.68 ± 0.25 in the negative group (P=0.001). Ten of 27 patients (37%) with non-malignant IPU revealed clinically significant bacterial infections in their prostate. Multivariable analysis also showed that bacterial presence in EPS increased the risk of IPU (adjusted odds ratio [OR], 9.167; 95% confidence interval [CI], 1.450-57.975; P = .019) (Table 1).

Interpretation of results

A bacterial presence in prostate tends to increase the risk of incidental non-malignant prostatic FDG uptake on FDG PET/CT.

Concluding message

Therefore, men with incidental prostate FDG uptake should be considered the possibility of their prostate infection besides concomitant malignancy.

Table 1. Clinical characteristics of study subjects and influence of patient characteristics on ^{18}F-FDG on positron emission tomography-computed tomography scan positivity

Variable		^{18}F-FDG PET/CT[1]		Odds ratio (95% confidential interval) from multivariable logistic regression	P-value*
		Positive	Negative		
PSA[2,3] (ng/mL)		3.72 ± 3.60	2.24 ± 3.27	1.245 (0.973-1.594)	0.081
Age (No) (Yr)	30-54	12	4		
	≥55	15	15	0.319 (0.066-1.505)	0.148
WBC[4]s per high-power field					
WBC[4] counts in urine (No)	<5	26	19		
	≥5	1	0	Not included	
WBC[4] counts in EPS[5] (No)	<15	16	14		
	≥15	11	5	1.453 (0.292-7.217)	0.648
Prostate culture (No)					
Positive		10	2		
Negative		17	17	9.167 (1.450-57.975)	0.019*
Combined malignancies (No)					
Yes (for cancer staging)		20	15		
No (for cancer screening)		7	4	0.488 (0.087-2.739)	0.415

[1] ^{18}F-FDG PET/CT; ^{18}F-FDG on positron emission tomography-computed tomography scan, [2]PSA; prostate-specific antigen. [3]We used non-parametric tests (the Mann-Whitney test) for difference in serum PSA levels. [4]WBC; white blood cell. [5]EPS; expressed prostatic secretion.

*Statistically significant at *P*<0.05.

References
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Disclosures
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