SCREENING OF POLYOMAVIRUSES INFECTION IN KIDNEY TRANSPLANT RECIPIENTS

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Introduction and aims

Infection with human polyomaviruses (PV), such as BK virus (BKV) and JC virus (JCV), are very common, but their clinical meaning are often miscalculated. It's estimated that up to 80% of the population had contact with PV and is seropositive, however polyomavirus-associated nephropathy (PVAN) was mostly described in immunocompromised patients. PVAN is an emerging disease in kidney transplant recipients (KTRs) because of high graft loss up to 80%.

Methods

From November 2015 to October 2016 we examined 87 KTRs. Patients were between 8 day and 16 years after kidney transplantation (KTx) and were divided into 4 groups according to time after KTx: A - up to 1 month; B - between 1 and 12 months; C - between 1 and 4 years; D - more than 4 years.

We examined morning urine sample for the occurrence of PV (BKV and JCV) DNA by Quantitative Real-time PCR (Gene Proof BK/JC Virus PCR kit). The viral load in urine above the 15 000 copies /ml was considered positive.

RESULTS

PV viruria has been found in 31% of all patients. In the first period after KTx, PV infections were more often caused by JCV than BKV (83.3% vs. 16.7%), but with time BKV participation were increasing (group B - 37%, group C - 42%), and in group D dominated (57.1%). In one case (KTR 11 years after KTx) we have found PV coinfection (both BKV and JCV).

The presence of symptoms of PV infection specified as an increase of serum creatinine concentration by more than 20% in a period of 3 to 6 month with exclusion of other causes were noticed in one third of patients from groups B, C and D with confirmed PV viruria.

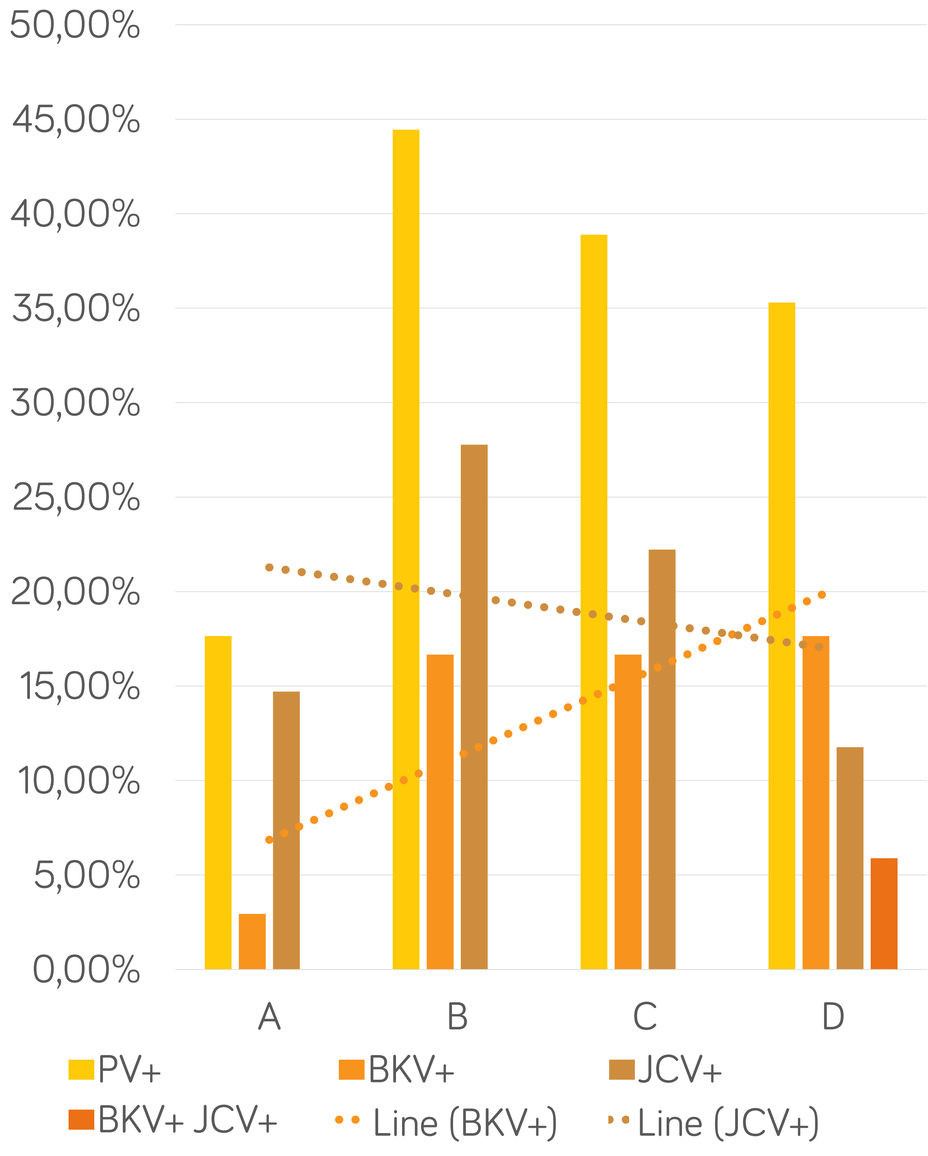
The prevalence of BKV and JCV were similar: 33% of BKV and 27% of JCV infection.

There was no statistical difference between PV viruria by women and men (38% vs. 47%, *p=0,84*), but males have got significantly more often symptoms of PV infection (16.7% vs. 50%, *p<0.05*).

Fig. 1 Groups by division

	No.	PV viruria % (No.)	BKV viruria % by PV (No.)	JCV viruria % by PV (No.)	PV viruria with symptoms % (No.)
Group A	34	17.65% (6)	16.67% (1)	83.33% (5)	0% (0)
Group B	18	44.44% (8)	37.50% (3)	62.50% (5)	38% (3)
Group C	18	38.89% (7)	42.86% (3)	57.14% (4)	29% (2)
Group D	17	31.03% (6)	57.14% (4)	37.50% (3)	25% (2)
All	**87**	**31.03% (27)**	**39.29% (11)**	**58.62% (17)**	**24% (7)**
Group B, C, and D	**53**	**39.62% (21)**	**45.45% (10)**	**52.17% (12)**	**30% (7)**

Fig. 2 Frequency of BV infections by groups



CONCLUSIONS

PV infection is **common** in patients after KTx, however the symptoms occurs in only one third of patients with PV viruria.

Screening for urinary PV viral load seems to be necessary thus it will allow for early intervention and avoid loose function of kidney graft due to PVAN.

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