Features of HPV infection in squamous cell cervical carcinomas of Immunocompromised patients

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Persistence of high carcinogenic risk (HR) HPVs in immunocompetent patients is limited by effective anti-viral immune response, while immune suppression leads to persistence of HR-HPV types, eventual transformation, and development of squamous cell cervical carcinomas (SCCC) with alterations in expression of check-point inhibitor genes including *PD-1* and *PD-L1*. We analyzed distribution of HR-HPV types, and *PD-1* and *PD-L1* gene expression in SCCC tissues of patients immunocompromised by HIV-1, mycobacterial/TB infections, and HIV/TB-coinfection. Study included 10 HIV(-)TB(-), 8 HIV(-)TB(+), 9 HIV(+)TB(-) and 13 HIV(+)TB(+) patho-morphologically verified SCCC cases. Total DNA and RNA was extracted from FFPE samples using All Prep DNA/RNA FFPE kit (Quiagen). Presence of 12 HR-HPV types was determined by quadruplex real-time PCR (AmpliSense HPV HOR genotype FL). *PD1* and *PD-L1* expression was assessed by real-time PCR after reverse transcription. HPV16, 18 and 33 were found in all; HPV39 in HIV(+)TB(-); HPV31, 35, 39, 52 in HIV(-)TB(+); and HPV33, 35, 39, 45, 52, 56, 59 in tumors of HIV(+)TB(+)-patients. HIV(+) samples were characterized by relatively decreased expression of *PD-1* (76%) and increased expression of *PD-L1* (151%). Expression of *PD-L1* tended to correlate with HPV18 load (R=0,69; p=0.08). In conclusion, immunosuppression due to HIV-infection results in increased abundance in SCCC tissues of HR-HPV of types other than 16, 18 and 33, and immunosuppression due to HIV/TB-coinfection, to additional increase in the number of circulating HR-HPV types. HR-HPVs modulate the level of PD-L1 expression. Significance of PD-1/PD-L1 findings would be verified after complementation of the cohort with additional samples.

Speaker Biography

Elizaveta Starodubova has completed her PhD in the Engelhardt Institute of Molecular Biology, Russian Academy of Sciences, and continued her postdoctoral studies there and at the Department of Microbiology, Tumor and Cell Biology (MTC), Karolinska Institutet, Stockholm. She performs her studies in the field of antigen processing and design of prototype DNA-vaccines against viral infections and cancer.

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