

Oral presentation

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## Transmission of Hepatitis B virus (HBV) minor variants in children born to HBV/HIV co-infected mothers

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### Background

Since 1992, the Ministry of Public Health has integrated newborns HBV vaccination into the national expanded program on immunization. However, some children acquire HBV infection despite immunization.

### Objective

To characterize HBV vaccine escape mutants in infants born to HBV/HIV-1 co-infected mothers.

### Methods

Of 1433 HIV-infected women participating in the perinatal HIV prevention trial (PHPT-1), 107 were HBsAg positive. Five transmitted HBV to their children despite HBV vaccination in their children were documented. Blood samples collected from mothers during pregnancy and children at 4 and 6 months of age were analyzed by direct PCR sequencing of the S gene ("a" determinant region and flanking regions). HBV variants were sequenced after cloning of PCR products into pGEM-T<sup>®</sup> easy vector (20–25 clones by samples). Sequencing was performed using the BigDye Terminator V.3.1 sequencing kit, Applied Biosystem. Sequence alignments were performed using Bioedit

software. HBV serotype was inferred from results at codons 122, 127, 160, 177 and 178 of the S gene.

### Results

Complete samples series were available for 3 mother-child pairs, all infected by HBV genotype C. Infant virus direct sequencing showed no known vaccine escape mutation. However, direct sequencing identified the sK122R mutation in 2 infants but not in their mother. The predicted dominant HBV serotype in the 2 mothers was *adrq+*, while it was *ayr* in the 2 children at 4 months of age. Although sK122R was not detected by direct sequencing, further analysis of maternal clones showed that the 2 mothers harbored this minor variant at very low frequency (1 of 65 clones and 2 of 67 clones, respectively). Analysis of children HBV clones showed an increase of *ayr* variants from 4 months to 6 months.

### Conclusion

Although the impact of the sK122R mutation on HBV vaccine escape is unknown, this study suggests that HBV minor maternal variants defining serotype can be transmitted to children who received HBV vaccine. This observation justifies the systematic virological evaluation of

children infected despite active immunization and their mother.

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