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Paper Poster Session
Emerging and pre-emerging viruses

Persistence of virus replication markers in respiratory samples from human EBOV infection

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Background: An unprecedented Ebola outbreak occurred in 2014-2015 in West Africa. A better understanding of the EBOV life cycle is fundamental to develop new countermeasures, as well as to fully comprehend the pathways of inter-human transmission. We have explored the possibility of viral persistence in different body fluids' samples obtained from a Health Care Worker (HCW) infected in Sierra Leone and treated at INMI L. Spallanzani, Italy. In order to evaluate whether in these districts the virus was in a replicative status or simply derived from blood spill over, we compared the trends of viral mRNAs and of total Viral RNA in clinical samples from different body districts.

Material/methods: Clinical samples were inactivated in BSL4 facility and RNA was extracted with QIAamp Viral RNA Mini Kit (Qiagen). Quantification of total Viral RNA was performed with the reference test Altona FilovirusScreen Kit1.0 (Altona Diagnostics). To measure viral mRNAs, oligo-dT primers were used to obtain cDNA, and virus specific RNA were measured using the FilovirusScreen Kit.

Results: The clinical samples analyzed (sputum, ocular swab, urine and plasma) show different trends in mRNAs and Total Viral RNA levels. In Ocular Swab and Urine, mRNAs levels are always undetectable, while total Viral RNA remains detectable until Day 5 and Day 15, respectively. On the contrary, in plasma, total Viral RNA and mRNAs levels simultaneously decreased, starting from day 3

and becoming undetectable at Day 6 after hospitalization. In Sputum, mRNAs levels decreased since Day 8, persisting at detectable levels up to Day 10, coherently with total Viral RNA levels, which start decreasing at Day 10 and become undetectable at Day 11.

Conclusions: The presence of viral RNA in sputum samples might be of relevance in future analysis regarding the persistence of the virus in the upper respiratory tract, even after viral clearance from plasma. These results should be taken under further investigation in order to better understand the role of the respiratory tract for possible involvement in viral shedding, or even in considering it as a viral replication site or as a viral reservoir.