

Tuberculosis in Humans and Animals in the Eastern Part of the Sudan

Authors : Yassir Adam Shuaib, Stefan Niemann, Eltahir Awad Khalil, Ulrich Schaible, Lothar Heinz Wieler, Mohammed Ahmed Bakhiet, Abbashar Osman Mohammed, Mohamed Abdelsalam Abdalla, Elvira Richter

Abstract : Tuberculosis (TB) is a chronic bacterial disease of humans and animals and it is characterized by the progressive development of specific granulomatous tubercle lesions in affected tissues. In a six-month study, from June to November 2014, a total of 2,304 carcasses of cattle, camel, sheep, and goats slaughtered at East and West Gaash slaughterhouses, Kassala, were investigated during postmortem, in parallel, 101 sputum samples from TB suspected patients at Kassala and El-Gadarif Teaching Hospitals were collected in order to investigate tuberculosis in animals and humans. Only 0.1% carcasses were found with suspected TB lesions in the liver and lung and peritoneal cavity of two sheep and no tuberculous lesions were found in the carcasses of cattle, goats or camels. All samples, tissue lesions and sputum, were decontaminated by the NALC-NaOH method and cultured for mycobacterial growth at the NRZ for Mycobacteria, Research Center Borstel, Germany. Genotyping and molecular characterization of the grown strains were done by line probe assay (GenoType CM and MTBC) and 16S rDNA, rpoB gene, and ITS sequencing, spoligotyping, MIRU-VNTR typing and next generation sequencing (NGS). Culture of the specimens revealed growth of organisms from 81.6% of all samples. Mycobacterium tuberculosis (76.2%), M. intracellulare (14.2%), mixed infection with M. tuberculosis and M. intracellulare (6.0%) and mixed infection with M. tuberculosis and M. fortuitum and with M. intracellulare and unknown species (1.2%) were detected in the sputum samples and unknown species (1.2%) were detected in the samples of one of the animals tissues. From the 69 M. tuberculosis strains, 25 (36.2%) were showing either mono-drug-resistant or multi-drug-resistant or poly-drug-resistant but none was extensively drug-resistant. In conclusion, the prevalence of TB in animals was very low while in humans M. tuberculosis-Delhi/CAS lineage was responsible for most cases and there was an evidence of MDR transmission and acquisition.

Keywords : animal, human, slaughterhouse, Sudan, tuberculosis

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