

NEW DIAGNOSTIC TOOLS FOR RABIES IN ANIMALS

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Rabies is routinely diagnosed in animals based on clinical signs and on epidemiological grounds in rabies-endemic countries. Negative diagnostic tests using conventional assays, even late in the disease, do not exclude the clinical diagnosis as these tests can be sub-optimal and are entirely dependent on the nature and quality of the sample supplied. The use of conventional OIE-prescribed diagnostic tests including the fluorescent antibody test (FAT) and the rabies tissue-culture infection test (RTCIT) can now be complemented with molecular diagnostic tools, advanced histopathology and serological assays. Molecular tools especially RT-PCR methods and virus typing are increasingly used for the rapid detection of viral nucleic acid in clinical samples. A pan-lyssavirus PCR offers detection of all recognised lyssaviruses. In addition, the development of a single, closed tube, RT-PCR TaqMan assay distinguished between strains of rabies virus in real time. The TaqMan assay is rapid, sensitive, specific and allows for the genotyping of unknown isolates concomitant with the RT-PCR. In addition, our ability to detect virus in tissue other than brain has been enhanced by using a variety of histopathology techniques, including immunocytochemistry and in-situ hybridization. For serological testing, we have developed retroviral vectors that can be used in neutralisation assays to determine antibody titres for rabies virus. The challenges in the 21st century for diagnostic test developers are two-fold: firstly, to achieve internationally accepted validation of a test that will then lead to its acceptance by organisations globally. Secondly, the areas of the world where such tests are needed are mainly in developing regions where financial and logistical barriers prevent their implementation. These barriers are not insurmountable and it is our expectation that if such tests are accepted and implemented where they are most needed, they will provide substantial improvements for rabies diagnosis and surveillance of this disease.

