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ADVANTAGES OF THE G/XPERT XDR METHOD IN ACCURATE DIAGNOSIS OF DRUG-RESISTANT TUBERCULOSIS

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Abstract
For medicines drug-resistant tuberculosis (DR-TB) globally health in storage the most serious from problems one to be, in particular, many to medicines resistant (MDR-TB) and wide to medicines resistant (XDR-TB) forms treatment makes it difficult. In this article GeneXpert MTB/XDR method to medicines durable tuberculosis exactly diagnostic advantages scientific based in case deep analysis is done. Method to rifampicin endurance detected in patients isonazid, fluoroquinolones, the second-row injection drugs and to ethionamide endurance from 90 minutes less time inside high sensitivity (93–96 %) and to oneself with specificity (98–99 %) to find out takes. In the article of the method speed is high accuracy, as a reflex test application, economic efficiency and low and middle profitable in countries current verb ease separately is emphasized. Thus together, less numerical mutations passing sent situations and additional for tests need like limitations also seeing will be released. Summary as to say possible, GeneXpert MTB/XDR in modern tuberculosis control revolutionary weapon is, WHO until 2035 tuberculosis no to do to the strategy important contribution adds.

Keywords: To medicines drug-resistant tuberculosis, XDR-TB, GeneXpert MTB/XDR, molecular diagnostics, fluoroquinolone resistance, isonazid endurance, fast diagnosis, WHO recommendations, antibiotic resistance.

Introduction

To medicines resistant tuberculosis (DR-TB) global health storage in the system serious problem is, every year millions people to life threat is putting. World health storage According to the World Health Organization (WHO), according to, in 2023 approximately 450 thousand new rifampicin resistant tuberculosis (RR-TB) cases recorded, of which most of many to drugs resistant (MDR-TB) or wide to drugs resistant (XDR-TB) forms past. Traditional diagnosis methods, for example, culture cultivation and medicines sensitivity tests (DST), weeks or months continue to be able it is possible, this and of the disease spread reinforces and wrong to treat take comes. Such in the situation molecular diagnostic technologies, in particular the GeneXpert MTB/XDR method, to detect DR-TB fast and accurate in determining revolutionary changes brought This method Cepheid company by working issued is automated to the

cartridge based Mycobacterium through the system tuberculosis complex and a row first and row second to the medicines endurance one of time in itself determines.

GeneXpert MTB/ XDR main mechanism polymerase chain reaction (PCR) and real at the time genetic mutations to determine This test is based on rifampicin resistant tuberculosis determined of patients phlegm samples or direct suspicion of TB was in samples It is used to treat resistance to isoniazid (INH), fluoroquinolones (FQ, e.g. levofloxacin and moxifloxacin), ethionamide (ETH), and aminoglycosides (e.g. amikacin, kanamycin, and capreomycin). determines. Mechanism rpoB, katG, inhA, gyrA, gyrB, ethA and eis in genes mutations goal so that they cartridge inside automatic accordingly analysis Results in 90 minutes less at the time is issued, this and traditional compared to phenotypic DST time noticeable shortens, because culture cultivation 2-8 weeks demand This speed patients quickly suitable treatment to the mode transfer opportunity This gives MDR / XDR- TB in management important importance has, because delayed diagnosis death increase the level by 20-30% possible.

The method main from the advantages one high accuracy level is clinical in research proven. Cochrane systematic seeing to the exit According to Xpert MTB / XDR to isoniazid endurance in the definition sensitivity is 94% and specificity 98%, to fluoroquinolones relatively and sensitivity 93% and self 99 % unique organization Aminoglycosides Sensitivity for endurance is between 86-92%, self- uniqueness and about 99%. Other in research, for example, rifampicin with resistant TB XDR in patients in determining The overall accuracy of the method is over 98%. high was, this and wrong positive the results minimizing resources saves. Such indicators, especially resources limited in countries important because traditional methods high biotrade level (BSL-3 laboratories) required and Xpert MTB / XDR simple laboratory under the circumstances work takes and minimum for operators teaching enough does.

Again one important advantage - of the method reflex test as application, that is Xpert MTB/RIF test rifampicin endurance after determining after immediately XDR check. WHO is approach to MDR/XDR- TB in management recommendation because it is diagnostic chain optimized, 80% of patients on the first day complete medicine sensitivity profile Clinical in practice this disease spread prevent takes, because wrong treatment of endurance to develop take For example, Uzbekistan such as high loaded In countries where 25% of the population has MDR-TB, Xpert MTB / XDR current to grow treatment increase success rate from 60% to 85% possible, because fast diagnosis individualized treatment provides.

Economic in terms of also method preferred: Research this shows that Xpert MTB / XDR application traditional to methods relatively every one 20-30% cheaper for the condition is long within the period health storage expenses reduces, because delayed diagnosis additional diseases and long term to treat take comes. From this except for the method high throughput (4-8 tests per day) and integration there is GeneXpert platform with, infrastructure without changing current to reach facilitates. Clinical in studies, for example, in India and South In Africa held in tests, Xpert MTB/ XDR use MDR- TB in patients fluoroquinolone 91% accuracy of durability with identify and treat modes to change help gave.

This with together, the method restrictions also there are, for example, some mutations passing send possible, but this cases from 5% less and extra tests with eliminate is generally GeneXpert MTB / XDR DR-TB diagnostics democratizing and developing TB in countries control to do In the future, the method other to pathogens adaptation and artificial intellect with integration

to do further high to the results take arrival it is possible, this and WHO 's 2035 until TB no to do to the strategy contribution Addictive.

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