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MICROBIOLOGICAL DIAGNOSTIC METHODS

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Abstract

The most important place in the laboratory diagnosis of infectious diseases is occupied by specific microbiological diagnostics, which is performed in bacteriological, virological, immunological and other laboratories. It consists of three stages: pre-analytical, analytical and post-analytical. The analytical stage includes microscopic, culture, biological, serological and allergological methods of microbiological diagnostics [4,8,9].

Keywords: Microbiological diagnostics, culture, biological, serological and allergological methods of research.

Introduction

The microscopic method consists in the preparation of preparations (native or stained by simple or complex methods) from the material under study and their microscopy using various types of microscopic techniques (light, dark-field, phase-contrast, luminescent, electronic, etc.). In bacteriology, the microscopic method is called bacterioscopic, in virology – virososcopic [4,5,6].

The culture method consists of sowing the material under investigation on artificial nutrient media, cell cultures or chicken embryos in order to isolate and identify a pure culture of the pathogen or pathogens. In bacteriology the culture method is called bacteriological, in mycology - mycological, in protozoology - protozoological, in virology – virological [1,2,3].

Biological method (experimental or bioassay) consists in infecting sensitive laboratory animals or other biological objects (chicken embryos, cell cultures) with the material under investigation. It is used for isolation of pure culture of the pathogen, determination of toxin type, activity of antimicrobial chemotherapeutic agents, etc [5,6].

Volume 3, Issue 1, January 2025

Serological method consists in determining the titer of specific antibodies in the blood serum of the patient, less often - in the detection of microbial antigen in the material under study. Immune reactions are used for this purpose [4,7].

The allergological method consists of identifying an infectious allergy (HRT) to a diagnostic microbial allergen. For this purpose, skin allergy tests are performed with the corresponding allergens [6,7,8,9].

The diagnostic value of these methods is unequal. The leading method of microbiological diagnostics is the bacteriological method, since it allows the isolation and identification of the causative microbe, i.e. the root cause of the disease. Other methods are less informative, since they make it possible to detect changes in the body caused by the presence of a microbe in it.

The second place in importance is occupied by the serological method, since the interaction of antigen and antibody is characterized by a high degree of specificity.

The information content of the other three methods is low, and they usually serve as a complement to the bacteriological and serological methods. Thus, microscopy of the material under study does not always allow microbes to be seen and identified under a microscope.

They can only be detected when the material is highly contaminated with them. Even if bacteria are detected under a microscope, it is impossible to identify them morphologically to species. As is known, the entire species diversity of bacteria comes down to 4 main morphological forms: cocci, rods, convoluted and branching forms. Therefore, based on the microscopic picture, it is possible to roughly attribute the bacteria seen to a large taxon, for example, gram-positive cocci. Only in isolated cases, when bacteria have a unique morphology, can their genus be determined microscopically. The information content of the microscopic method of fungi and protozoa is higher, since fungi and protozoa, being eukaryotes, have larger sizes and a more characteristic morphology [5,6,7,8,9].

The diagnostic capabilities of the biological method are limited by the fact that laboratory animals are immune to most pathogens of anthroponotic human infections, so it is not possible to cause an experimental infection in them [11,12].

The capabilities of the allergological method are limited by the fact that most microbes in the human body do not cause HRT [10].

Since microbiological studies are one of the most expensive types of laboratory research, the microbiologist is faced with the task of making a reliable microbiological diagnosis with the least amount of time, effort and money. Therefore, to make a diagnosis, 1-5 diagnostic methods are used so that the selected set of methods guarantees the correct answer [7,8,9].

Of particular importance are express diagnostic methods, which make it possible to make a microbiological diagnosis within a short period of time (from several minutes to several hours) from the moment the test material is delivered to the laboratory. Express methods include RIF, ELISA, RIA, PCR, the use of biochips, chromatography, etc. Features of the diagnosis of anaerobic infections are described in the materials of the disk [1,2,3].

Along with traditional classical methods of microbiological diagnostics, in recent years molecular biological diagnostic methods (DNA probes, PCR, ligase chain reaction - LCR, chromatography, electrophoresis, immunoblot, biochips, etc.) have become increasingly important [3,5,7].

282 | Page





Molecular biological diagnostic methods are based on the identification of DNA and RNA specific to a given microbial species, and include hybridization based on DNA probes and PCR-based diagnostics [5,6,9].

Thus, the post-analytical stage of microbiological diagnostics consists of the clinical results of laboratory tests. In this case, the attending physician must assess the biological significance of the isolated microorganisms and adjust, based on the data of the microbiological Diptych, the hospital empirical antimicrobial chemotherapy [7,8,9,10,15,16].

References

- Abduhakimov B. A. et al. Bolalar va o'smirlarda birlamchi tuberkulyozning o'ziga xos kechish xususiyatlari va klinik-laboratoriya usullari //Ta'lim innovatsiyasi va integratsiyasi. – 2024. – T. 32. – №. 3. – C. 139-143.
- 2. Бердиярова Ш. Ш. и др. Клинико-лабораторная диагностика фолиевой кислотодефицитной анемии //TADQIQOTLAR. UZ. 2024. Т. 49. №. 3. С. 46-53.
- Umarova T. A., Kudratova Z. E., Axmadova P. Role of conditionally pathogenic microflora in human life activities //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2024. – T. 2. – №. 11. – C. 29-32.
- Muhamadiyeva L. A., Kudratova Z. E., Sirojeddinova S. Pastki nafas yo'llari patologiyasining rivojlanishida atipik mikrofloraning roli va zamonaviy diagnostikasi //Tadqiqotlar. Uz. – 2024. – T. 37. – №. 3. – C. 135-139.
- Umarova T. A., Kudratova Z. E., Norboyeva F. Modern aspects of etiology and epidemiology of giardias //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2024. – T. 2. – №. 11. – C. 25-28.
- 6. Isomadinova L. K., Daminov F. A. Glomerulonefrit kasalligida sitokinlar ahamiyati //Journal of new century innovations. 2024. T. 49. №. 2. C. 117-120.
- Umarova T. A., Kudratova Z. E., Maxmudova H. Mechanisms of infection by echinocococosis //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2024. – T. 2. – №. 11. – C. 18-21.
- Даминов Ф. А., Исомадинова Л. К., Рашидов А. Этиопатогенгетические и клиниколабораторные особенности сальмонелиоза //TADQIQOTLAR. UZ. – 2024. – Т. 49. – №. 3. – С. 61-67.
- Umarova T. A., Kudratova Z. E., Baxromova M. Autoimmune diseases: new solutions in modern laboratory diagnostics //International Conference on Modern Science and Scientific Studies. – 2024. – C. 78-81.
- 10. Бердиярова Ш. Ш. и др. Узловой зоб и его клинико-лабораторная диагностика //TADQIQOTLAR. UZ. – 2024. – Т. 49. – №. 3. – С. 38-45.
- Umarova T. A., Kudratova Z. E., Muhsinovna R. M. The main purpose of laboratory diagnosis in rheumatic diseases //International Conference on Modern Science and Scientific Studies. – 2024. – C. 82-85.
- 12. Umarova T. A., Kudratova Z. E., Ruxshona X. Contemporary concepts of chronic pancryatitis //International Conference on Modern Science and Scientific Studies. – 2024. – C. 11-15.



283 | Page



Volume 3, Issue 1, January 2025

ISSN (E): 2938-3765

- Umarova T. A., Kudratova Z. E., Maxmudova D. Pathogenesis of bronchial asthma development at the present stage //International Conference on Modern Science and Scientific Studies. – 2024. – C. 21-24.
- Umarova T. A., Kudratova Z. E., Muminova G. Instrumental diagnostic studies in chronic pancreatitis //International Conference on Modern Science and Scientific Studies. – 2024. – C. 16-20.
- Umarova T. A., Kudratova Z. E., Norxujayeva A. Etiopathogenesis and modern laboratory diagnosis of prostatitis //International Conference on Modern Science and Scientific Studies. - 2024. - C. 6-10.
- Umarova T. A., Kudratova Z. E., Abduazizova Z. New views on clinical and laboratory aspects of rotavirus infection //Web of Medicine: Journal of Medicine, Practice and Nursing. 2024. T. 2. №. 12. C. 17-20.

