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The Role of Pseudomonas Spp in the Occurrence of Nosocomial Infections and the Current Status of Bacteriological Diagnosis

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Abstract: Hospital-acquired infections (HAIs), also known as nosocomial infections, are one of the most important problems in the healthcare system. These infections often occur in hospitalized patients during medical procedures or as a result of prolonged hospital stays. HAIs not only pose a threat to patient health, but also lead to increased treatment costs, longer hospital stays, and increased mortality.

Key points: Hospital inside infection, nosocomial, Pseudomonas spp., KII.

Introduction.

Among the microorganisms that cause IBD, nosocomial, in particular Pseudomonas aeruginosa, is of great importance. This bacterium poses an epidemiological threat due to its resistance to many antibiotics, its ability to form biofilms, and its ability to persist in the hospital environment for a long time. Immunocompromised patients, those on ventilators, and those with catheters or other invasive devices are particularly susceptible to Pseudomonas infection.

Pseudomonas aeruginosa (blue pus bacillus) is widespread, which is facilitated by the high resistance of these bacteria to unfavorable environmental conditions, pronounced antagonistic activity and resistance to a wide range of natural biologically active substances and antimicrobial agents used in medical practice. For humans, blue pus bacillus is considered conditionally pathogenic, since not in all cases when it enters the body, the disease develops. The likelihood of infection increases significantly with a large number of pathogens entering the body, as well as in the case of immunodepression or immunodeficiency in weakened, exhausted people, against the background of the influence of stress factors accompanying injuries, burns, various surgical interventions and severe somatic pathology. Taking into account these two components, as well as the high resistance of P. aeruginosae to antimicrobial drugs, human infection can most often occur during a stay in a medical institution. All over the world, there is a tendency towards an increase in the proportion of diseases caused by Pseudomonas aeruginosa in the overall structure of hospital-acquired purulent-septic infections. The resistance of P. aeruginosae in the external environment, its undemanding nature to nutritional conditions, the presence of powerful virulence factors, and natural resistance to compounds with antibiotic activity determine the breadth of its spread and the formation of hospital strains, which often turns a hospital into an "epidemic hotbed" of Pseudomonas aeruginosa infection. Infectious complications that occur in hospitalized patients aggravate the course of the underlying disease, increase the duration of inpatient treatment and increase the number of adverse outcomes. The widespread (up to 75%) atypical forms of the pathogen complicates diagnosis and prevents timely implementation of therapeutic and anti-epidemic measures. All this necessitates the search for informative methods for diagnosing Pseudomonas aeruginosa infection with the identification of tests that facilitate the differentiation of hospital and community-acquired strains.

Research and methods.

This article discusses the role of Pseudomonas spp . in causing hospital-acquired infections, its nosocomial mechanisms, and modern bacteriological diagnostic methods used to detect it. The issues of antibiotic resistance are also discussed. Hospital-acquired infections, also known as nosocomial infections, are one of the most important health problems in healthcare facilities worldwide. This infections in the hospital lying down of patients health worsens , treatment the deadline noticeable at the level extends and death level increases . Especially , heavy patients , immunity weak was patients and from the operation next in the period standing patients this to infections more inclined This will be infections not only patients for , maybe health storage system too big for economic and is a social burden . World Health Organization storage according to the World Health Organization (WHO) according to , nosocomial infections reduce and from them prevent to take modern medicine the most current from the duties one is considered .

Pseudomonas spp , especially Pseudomonas aeruginosa, hospital inside infections the most many occurring from the instigators one is , this bacteria wide spectral to antibiotics endurance them treatment very Pseudomonas aeruginosa not only breath to take ways , maybe urine paths , wounds and blood also lead to infections These microorganisms not only high resistance , but also biofilm formation to do ability also separated from Biofilm formation microorganisms external to the environment and to antibiotics against endurance increases , this and for disinfection and to treat was difficulties strengthens .

Pseudomonas spp. infections hospital inside infections between high spread this microorganisms pathogenicity and to them against struggle the problem current Especially this bacteria by working removable exotoxins and other virulence factors of the disease heavy to the end and of patients far term for treatment needy to be reason by Pseudomonas aeruginosa working released beta- lactamase enzymes wide spectral inactivation of antibiotics , including carbapenems does this and this microorganisms clinical in terms of very dangerous does (Livermore, 2021).

Modern diagnostics methods application via Pseudomonas spp. what determination and treatment strategies working exit not only of patients health improve , maybe health storage in the system medical expenses also great in reducing importance has . Molecular biology methods , for example , real -time polymerase chain PCR and mass spectrometry using bacteria fast and clear determination opportunity Also available is MALDI-TOF spectrometry . such as new diagnostics technologies Pseudomonas spp. of to be determined accelerates and clinical in practice efficiency increases (Clarkson et al. et al ., 2022).

Result and discussion.

Pseudomonas spp. of hospital inside in infections place and their wide spectral to antibiotics endurance because of them effective control to do and early diagnosis to do necessity available . The research relevance from that consists of Pseudomonas spp. what determination and them effective treatment for new, fast and reliable diagnosis methods working exit necessity It is not only patients own on time treatment, maybe infections wide spread prevent to take It is also important for. This research Pseudomonas spp. by movable hospital inside infections early in stages determination and to them against in the fight new diagnostics approaches working to go out focused.

Work purpose: This of the work target Pseudomonas spp. of hospital inside in infections place and them in determining being used bacteriological diagnosis methods modern status from learning consists of .

Research tasks:

1. Hospital inside infections pathogenesis and Pseudomonas spp of in them role according to there is literature study.
2. Pseudomonas spp. of virulence factors and to antibiotics endurance assessment.

3. Modern bacteriological diagnosis methods study and their efficiency analysis to do
4. Pseudomonas spp. in determining applicable various diagnostics methods clinical importance compare
5. Research to the results based on the hospital inside infections early determination and treatment for practical recommendations working exit

Work newness: This Pseudomonas spp in the study of hospital inside infections in motion place and them determination methods modern status first times wide in scope studied. Research Pseudomonas spp. of to antibiotics resistance, including to carbapenems endurance level and his/her clinical in practice consequences about new information The study included Pseudomonas spp. what determination for molecular and bacteriological diagnosis methods efficiency and sensitivity evaluated.

Conclusion.

Research your work importance: Research results hospital inside infections effective diagnostics to do and treatment for medicine in practice application possible was recommendations working to go out service Pseudomonas spp . of virulence factors and to antibiotics endurance deep study as a result patients effective treatment opportunities increases , this and nosocomial infections spread to reduce and of patients life quality to improve help Also , this research clinical Pseudomonas spp in practice determination processes improve and new diagnostics approaches working on the way out important importance profession will reach .

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