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Chicken immunological active proteins (ciap): The specific reaction against multiple resistance bacterial strains in urinary tract infections

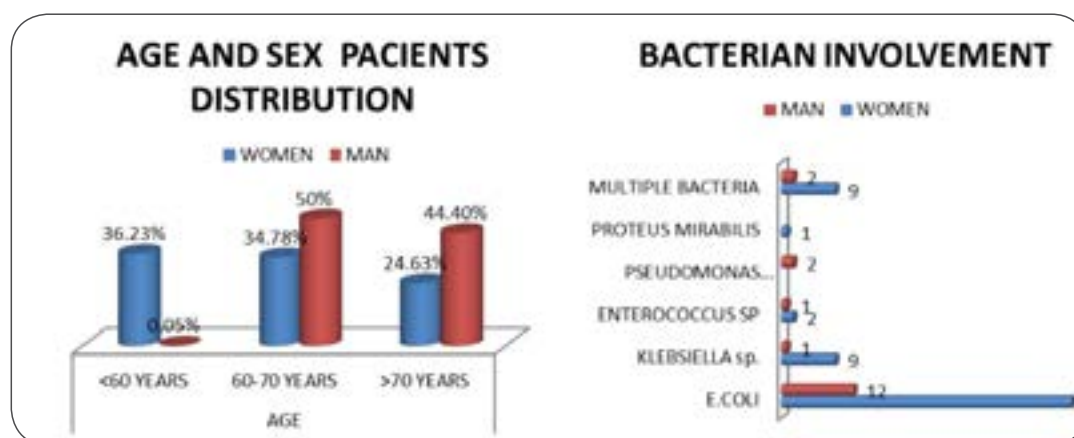
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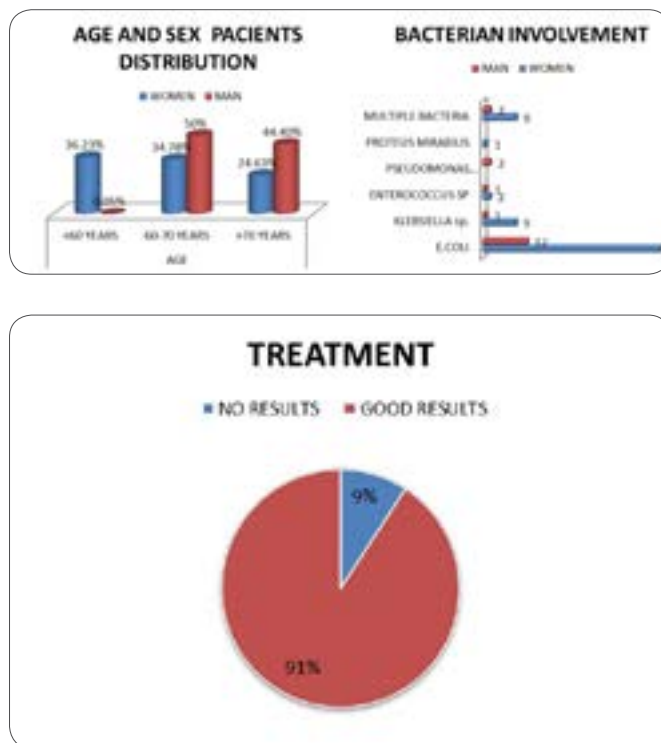
Statement of the Problem: The emergence of multidrug resistant bacteria in urinary tract infections (UTIs) is a challenge to medical professionals. According to ECDC (2018), more than a third of *K. pneumoniae* and half of *E. coli* strains reported were resistant to at least one of the antibiotics under surveillance. Moreover, the emergence of Colistin resistance among Enterobacteriaceae leave few therapeutic options against these "superbugs". Thus, immunological active proteins (IAP) have emerged as a potential therapeutic agent.

Material and methods: In this study, CIAP (egg proteins: IgY, holo-ovotransferrin, ovomucin, ovoalbumin and lysozyme) were obtained from Rhode Island red chickens immunized with antigens from *E. coli*, *Klebsiella pneumoniae*, *Enterococcus spp*, *Pseudomonas sp*, *Proteus sp*, *Candida sp*, and MRSA strains. 90 patients were included in the study, 87 of them compliant with the treatment; 20 were inpatients and 67 outpatients at Teaching Hospital of Nephrology dr.Carol Davila, Bucharest. 65% of them were known to have recurrent UTIs. The etiology of the UTIs: 68% *E. coli*, 12.6% multiple bacteria, 11.5% *Klebsiella*, 7.9% others. 35% of the isolates were MDR. CIAP efficiency was demonstrated in vitro by: quantitative assay for Chicken IgY ELISA Kit - ABCAM, rapid and slow agglutination test and bacterial growth inhibition test - HB&L ALIFAX (IAP + live bacterial cultures). CIAP were administered at diagnosis together with antibiotics, and as follow-up treatment for an average of 2 months.

Results: 8 patients were non-responsive (7F+1M), 79 were responsive as follows: 90% of the patients were cured with no recurrence, 10% had one recurrence during the study. For these patients, personalized treatment was made, using the strain isolated by urine culture after recurrence; the new treatment was curative.

Conclusion: Preliminary results reveal the possibility of using passive immunity to stimulate the active immunity in preventing infection recurrence and antibiotic resistance.





Recent Publications:

1. Wang Y, Tian GB, Zhang R, Shen Y, Tyrrell JM, Huang X, Zhou H, Lei L, Li HY, Doi Y, Fang Y, Ren H, Zhong LL, Shen Z, Zeng KJ, Wang S, Liu JH, Wu C, Walsh TR, Shen J – Prevalence, risk factors, outcomes, and molecular epidemiology of mcr-1-positive Enterobacteriaceae in patients and healthy adults from China: an epidemiological and clinical study, *Lancet Infect Dis*, 2017, 17(4), 390–399;
2. Sala C, Morar A, Morva AA – Antibiotic resistance of gram negative bacteria isolated from meat surface biofilm, *Roum Biotech Lett*, 2012, 17(4),7483-7492;
3. Branswell H – Superbug resistant to last-resort antibiotics turns up in Europe, *Stat*, December 3, 2015, <https://www.statnews.com/2015/12/03/superbug-antibiotics-europe/>;
4. Pătrașcu IV, Chiurciu V, Chiurciu C, Topilescu G-Procedure of production and application of chicken immunoglobulin [IgY], OSIM Patent no. A/00156 25.02.2014, see OSIM Official Monitor 7/2014, p.26;
5. Patrascu IV, Penescu M, Viasu L – Urinary tract infections (UTI) (2). *Escherichia coli* resistant to colistin and newly developed pathology, *Romanian Academy Session*, April 22, 2017.

Biography

Liliana Viasu MD, head of Laboratory at Teaching Hospital of Nephrology dr.Carol Davila ,Bucharest, Romania and scientific manager of Autoimmunity SRL. Born in 24th June 1970, graduated in University of Medicine and Pharmacy Carol Davila in Bucharest in 1998. Specialization in Laboratory Medicine, especially Immunology. 20 years of research in autoimmunity, hematology, bone metabolism, immunological disorders also specialization in Translational Medicine. In the last 2 years participate at the program for Antibiotic resistance of microorganisms, preclinical and clinical human studies and the second generation of immunogen I-spga that was managed to prepare IMUNOVIP able to react specifically with bacteria by oral treatment of antibiotic-resistant urinary tract infections in women. All the latest studies were made in collaboration with Pătrașcu Ionel Victor, MVD, PhD president of Activeimmunity SRL.

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