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Successful treatment of multidrug-resistant gram (-) bacteria and MRSA bacteriemia

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Multidrug-resistant organisms, Multidrug resistant bacteria such as methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-intermediate Staphylococcus aureus (VISA), vancomycin-resistant Enterococcus (VRE), multidrug resistant Streptococcus pneumoniae as well as multidrug resistant gram negative bacteria which includes extended spectrum beta-lactamases (ESBL), carbapenem resistant Enterobacteriaceae (CRE), extreme drug resistant Pseudomonas aeruginosa, pan drug resistant Pseudomonas aeruginosa, cause significant morbidity and mortality globally. The most common example of MDR bacteria is MRSA (methicillin-resistant *S. aureus*), Highly virulent, from strict hospital-acquired infection to community-associated spread. antibiotic-resistant are particularly challenging to treat. In *S. aureus*-induced pneumonia, leads to severe lung injury and ARDS.

We present a case to highlight the need for prolonged treatment and close monitoring of patients espetially with complications, associated of S. aureus bacteremia. The patient was transferred from the clinic, where he was admitted for paraplegia of the lower extremities, transverse myelitis was diagnosed. He underwent pulse therapy with methylpredizolone, due to the deterioration of his condition, he was transferred to the intensive care unit of our hospital .The patient underwent repeated examinations and was diagnosed with an epidural abscess at the level of the C5-Th1 vertebrae .

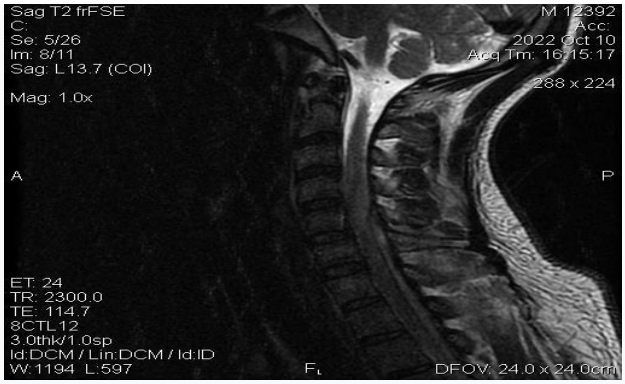
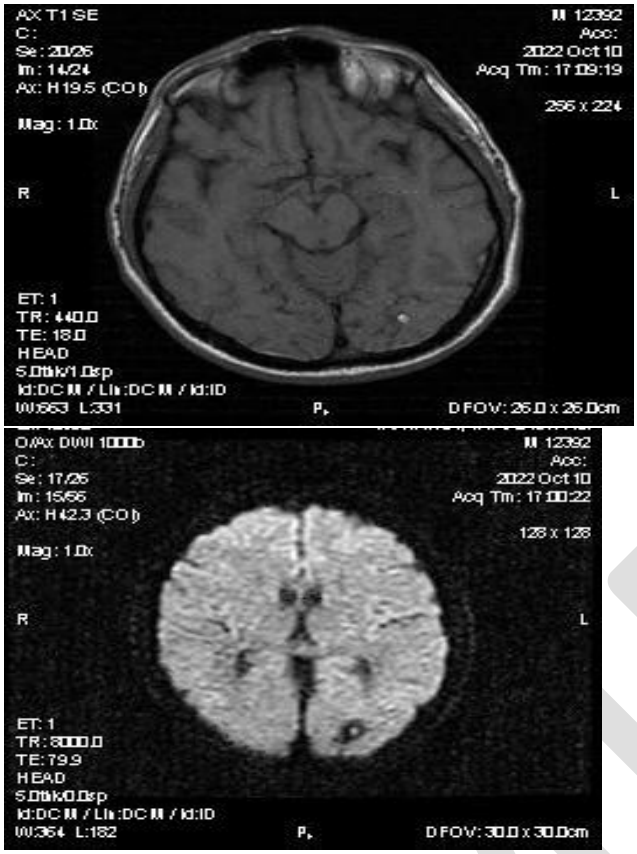
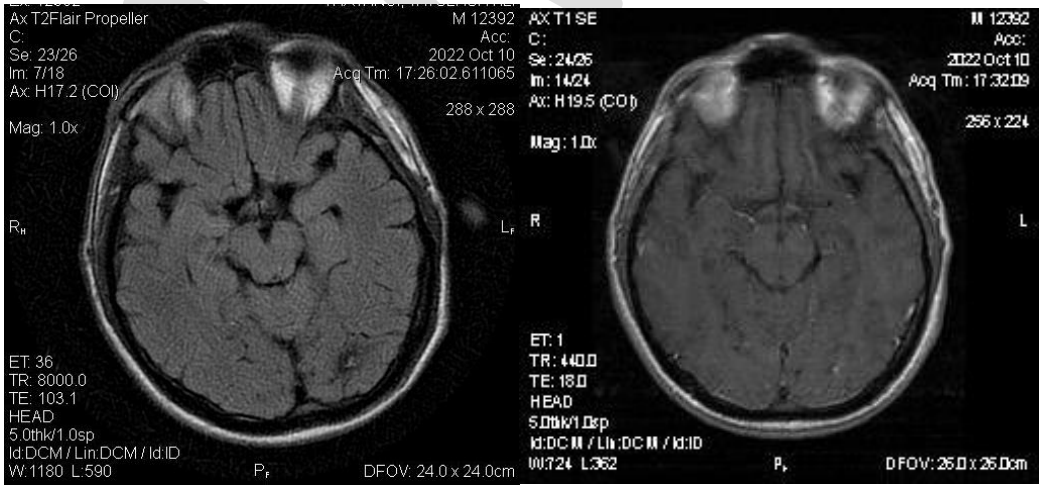


Fig.: 1 MRI of the cervical vertebrae. Sagittal section.

In the posterior epidural space at the level of C5-Th1 vertebrae, there is an area of viscous-fluid intensity (an epidural abscess is possible), which causes compression of the posterior cerebrospinal fluid space and the spinal cord in these segments, intervertebral discs are characterized with normal intensity signal

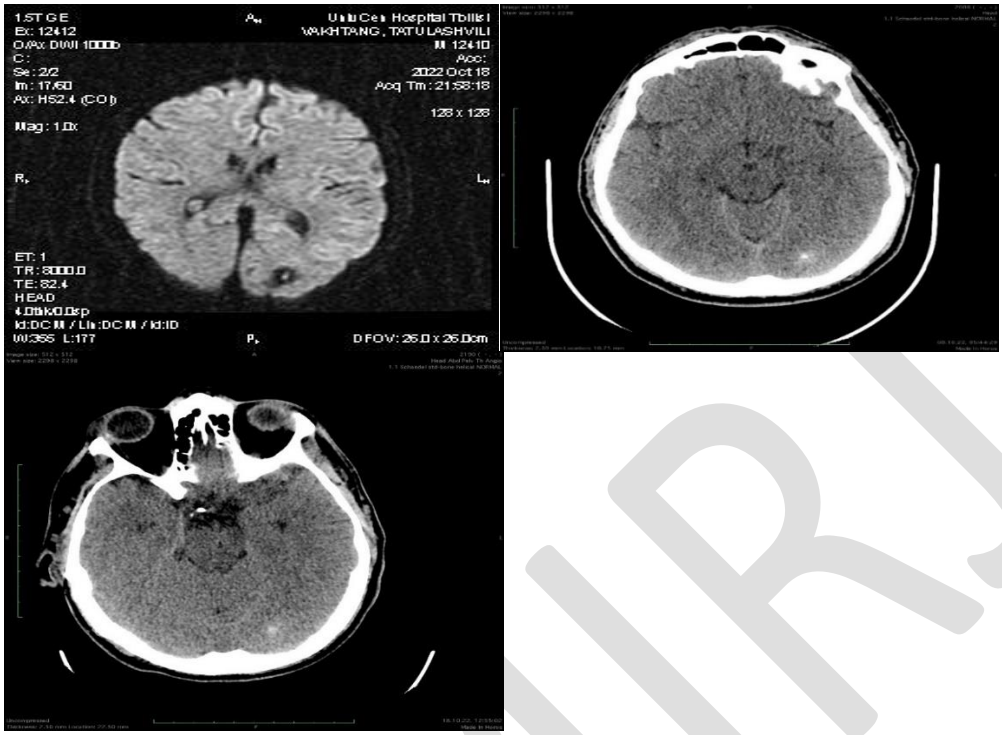


T1 in. T2 weighted image. dT1-weighted image with contrast enhancement. In the left occiput, subcortical Irregular, oval-shaped small high-intensity anomalous focus (SE T1, FLAIR T2) and hypointense (FRFSE T2) with a calcified area. After the introduction of a contrast agent (Magnevist 0.5 mmol/ml, 20 ml IV), the MRI picture of the brain does not change, the inclusion of contrast is not fixed. An MRI revealed an acute microhemorrhagic focus in the left and occipital part of the brain.

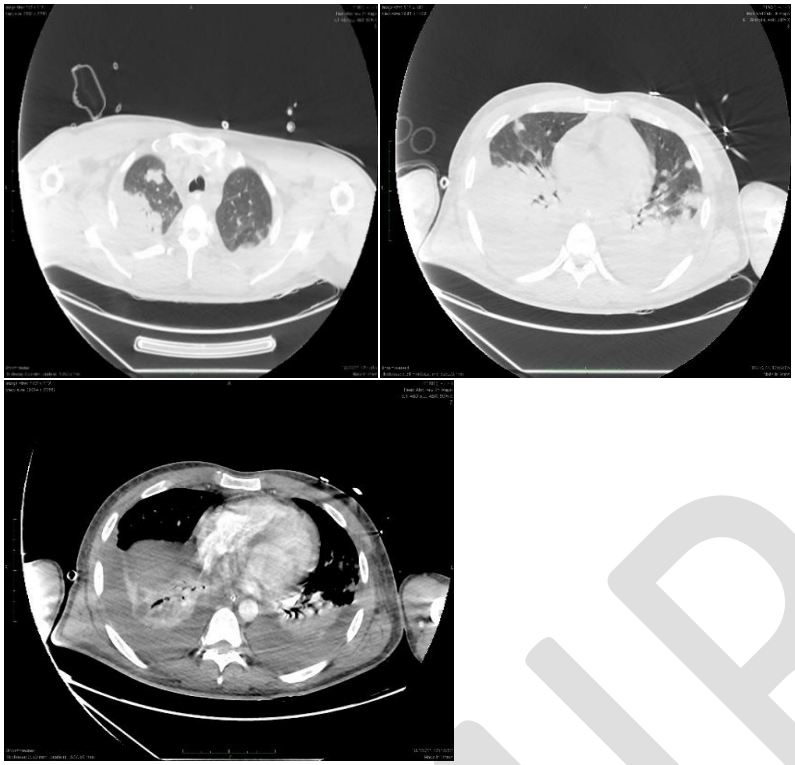


MRI of the brain. Diffusion limited imaging. Conducted surgical treatment - drainage of the epidural abscess. Bacteriological investigation of the sputum, blood and wound, was revealed Staphylococcus aureus (MRSA). The presence of *S. aureus* in the bloodstream (bacteremia) was lead to the development of sepsis, *S. aureus* sepsis and later endocarditis. Patient is on mechanical ventilation, in coma state, with unstable hemodynamic and under

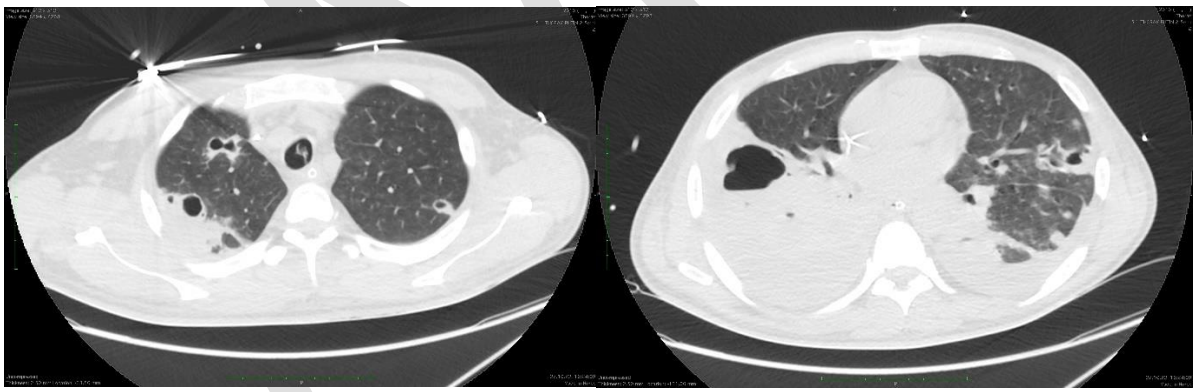
pressors support, fever. CSF results revealed meningitis, and treatment of staphylococcal infection in the blood continues, as well as antibacterial treatment of meningitis.



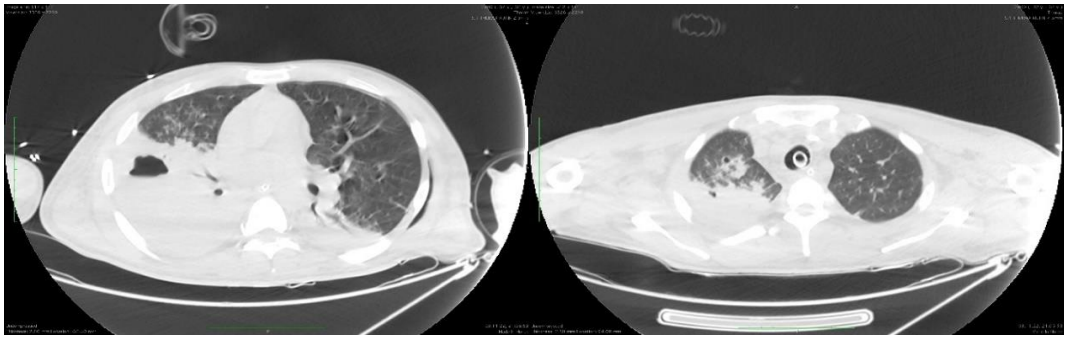
Sputum bacteriological analysis revealed Staphylococcus aureus (MRSA). The patient's condition worsened due to the development of severe respiratory distress syndrome. In the lung parenchyma, extensive infiltration changes of the consolidation type with subtotal distribution are detected on both sides, against which there are also different localization foci of density, in the right lower lobe, against the background of consolidation, there are also areas of liquid density. There is free fluid in both pleural cavities, stratification on the right 3.4 cm, on the left 3.7 cm. Free air was not detected

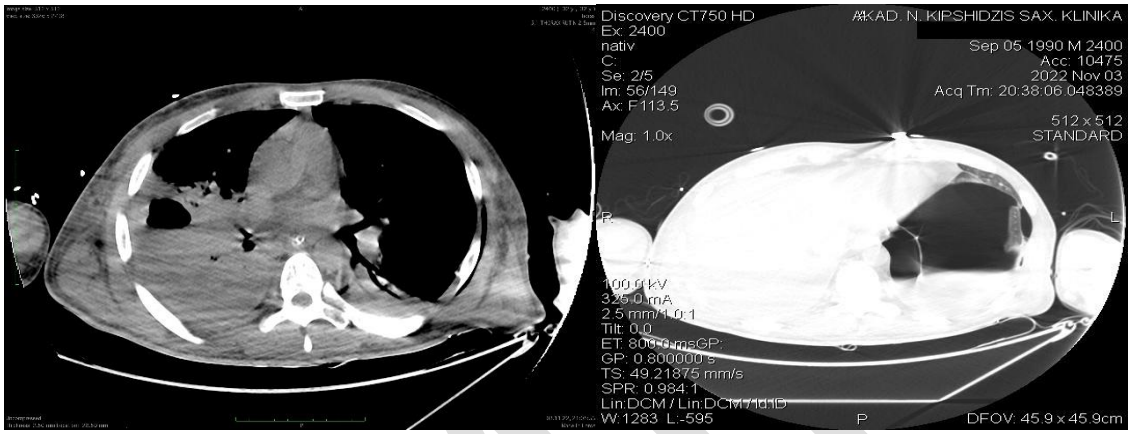


CT scan of the chest, with contrast enhancement
Focal infiltrative changes with a central destruction are observed in the upper lobes of bilateral lungs. In the lower lobes there are extensive consolidated infiltrative changes, on the right in the background there are several areas of low density and a 4.5 cm cavity containing gas and liquid (horizontal liquid level). In the pleural cavity on both sides of the free fluid, bundle 5.2 cm on the right. 3.2 cm to the left.

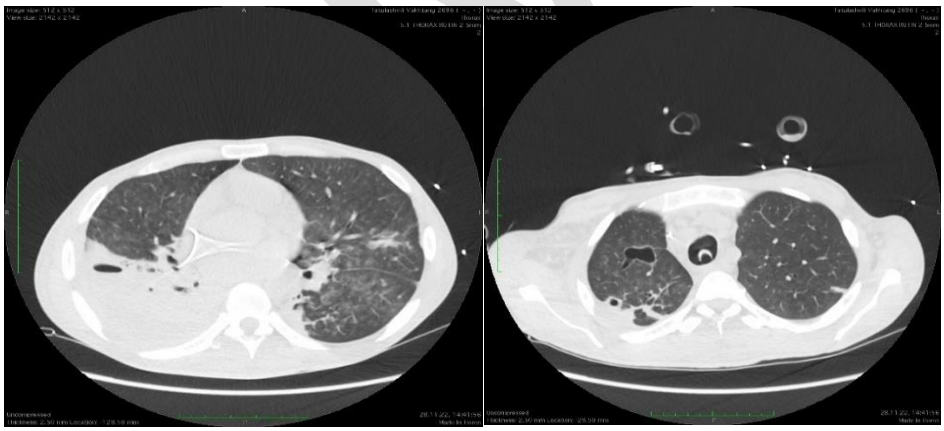


In the left pleural cavity was detected free air. Focal infiltrative changes with central tissue damage are observed in the upper lobes of the lungs. In the lower lobes, consolidated infiltrative changes are expressed with several areas of reduced density, on the right cavitation containing air and liquid, revealed a horizontal level of a liquid. There is free fluid in the pleural cavity on both sides,

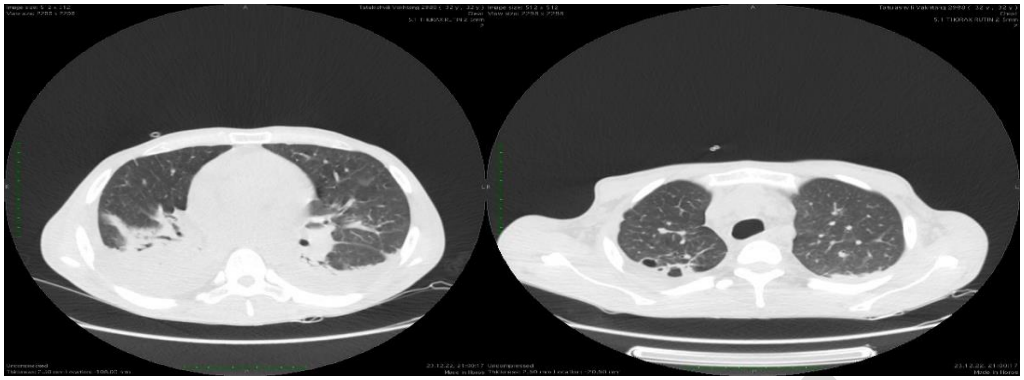




The pleural cavity of patient was drained. Patient is on mechanical ventilation $PaO_2/ FiO_2 < 100$ mm.Hg . Angiographic examination does not reveal filling defects in the pulmonary trunk and bilateral main, lobar and segmental arteries, there are no reliable signs of thrombosis. Focal infiltrative changes with a central destruction are observed in the upper lobes of the lungs. Consolidated infiltrative changes are determined in the lower lobes, there is free fluid in the pleural cavity on both sides



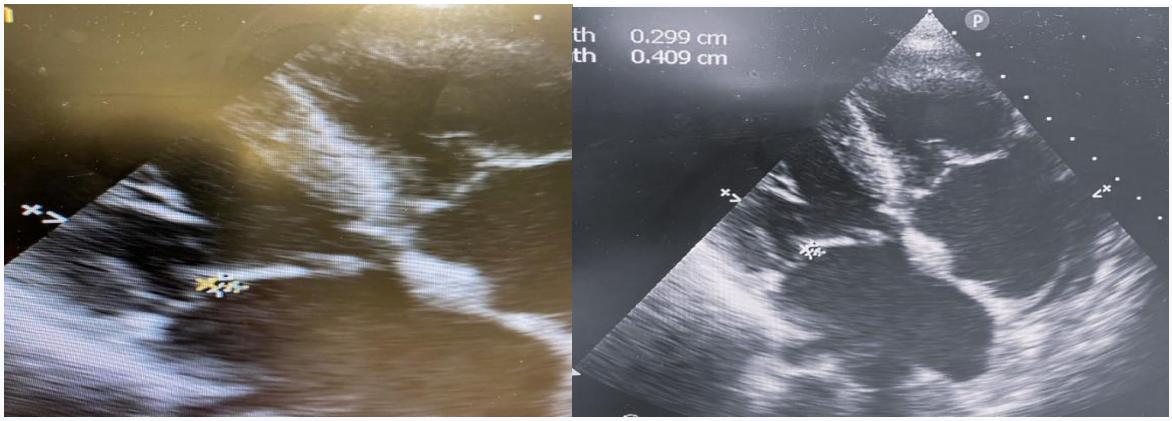
The decrease in transparency in bilateral lungs is less pronounced. The consolidation in the lower lobe on the right is somewhat reduced, the number of air cavities against the background of the consolidation is reduced, a subpleural air cavity is preserved at its upper edge. Air cavities in the upper lobe are no longer visible, fibrous stretch marks appear instead. There is a small fluid effusion in the bilateral pleural cavity.



During the course of the disease, different materials were examined, different groups of microbes and different sensitivity to antibiotics were observed

Bacteriopgical analyses sensitivity	Sputem /	Blood/	Wound/
09.10.	St. aureus(MRSA)/ TEicoplanin,vancomycin ,tigecycline , moxiflocxacin	St. aureus(MRSA)/ Vancomycin , clindamycine ,Teicoplanin	St. aureus(MRSA)/ TEicoplanin,vancomycin ,tigecycline , moxiflocxacin , erythromycin
17.10.	St aureus / (TEicoplanin,vancomycin ,tigecycline , moxiflocxacin) Candida spp		
24.11.	KLebsiella pneumonia/ (zavicefta , gentamicin , tigecyclin)	St. aureus/MRSA	
27.11.	KLebsiella pneumonia		
18.11.22	pseudomonas aeruginosa / (colistin -fosfomyscin)		
04.12.22 07.12 19.12.22	pseudomonas aeruginosa / (colisti n) KLebsiella pneumonia// pseudomonas aeruginosa / colistin,meropenem,tgecyclin	negative	sterile

Heart valves were evaluated periodically. After one episode of fever, the presence of vegetation on the mitral valve leaflet was revealed.



The scheme of antibacterial treatment implied the impact primarily on the gram-positive flora. Changing the combination of antibiotics occurred as clinical, radiological, or laboratory parameters worsened. in sputum and in the wound. Tigecycline improved the treatment regimen for ESBL and carbapenem-resistant gram-negative rods, as well as for a number of multidrug-resistant gram-positive pathogens (MRSA, VRSA, VRE).

With the appointment of Zavicefta (ceftazidime/avibactam), the regimen was strengthened for ESBL, carbapenem-resistant gram-negative organisms, and to expand coverage of multidrug-resistant strains of Pseudomonas.Successfully treat infections of MDRO, source control was crucial. New drugs and combination, for the purpose of treatment of MDRO was effective. Long-course (>18 days) therapy had the obvious benefit of infection resolution.

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