CHANGES OF CAUSATIVE ORGANISMS DURING ANTIBIOTIC THERAPY OF INFECTIONS OF THE UROGENITAL TRACT IN THE SOW

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Therapy and prophylaxis with antibiotics and chemotherapeutics to treat or to prevent acute puerperal disorders and urinary tract infections in the sow are not always successful. One of the reasons for an occasional failure of treatment is a too narrow spectrum of effectiveness of the therapeutics.

A change of microorganisms during or shortly after therapy may occur when using the last mentioned drugs. This change of microorganisms was obvious in our experiments especially when we used single substances having a high effectiveness referring a microbiologically differentiated strain of infectious agents but lacking an effect on certain facultative pathogenic microorganisms which were not or only in low amounts bacteriologically ascertained. These were previously not realized as infectious agents. Reasons for the ineffectiveness was a natural or acquired resistance of these strains of bacteria to the used substance. In some cases it was not easy to distinct infection changes from endogenous or exogenous superinfection (cross-infection). In selected models of in-patient treatment shall be shown the microbiological, clinical and cytological developments occurring during change of infectious agents whilst administering antibiotica and chemotherapeutica. Sows with chronic urinary tract infections showing parallelly inflammatory alterations of the genital tract were most useful in this respect.

Testing the drug OLAQUINOX for therapeutical purposes a change of bacteria happened in 2 out of 6 sows. In both cases the initial diagnosis was: Urinary tract infection and vaginitis caused by E. coli. In 1 case there was an additional chronic endometritis. All strains of E. coli isolated from urine and the genital tract were sensitive to OLAQUINOX in vitro. The E. coli bacteria were eliminated from urine and genital tract already after the first application of the drug. During treatment, however, Streptococci (Sc. faecalis liquefaciens, Sc. faecium) previously not or only in a limited number diagnosed, started to multiply. All Streptococci were highly resistant to Olaquinox in vitro.

When the drug application was stopped there was once again a change of bacteria. The Streptococci were displaced again by relapsing E. coli.

The effects of the change of bacteria were different. In case 1 the number of leucocytes stayed low during the phase of multiplication of the Streptococci. Thus we conclude that the Streptococci did not have pathogenic properties in contrast to E. coli. On the other hand in case 2 during the predominance of Streptococci the number of leucocytes in urine and vaginal swabs was neither decreasing nor disappeared the clinical symptoms. We conclude in this case that the Streptococci had have pathogenic importance.

Case 3 showed a mixed infection of E. coli and Streptococci in the urinary and genital tract. The elimination by OLAQUINOX of E. coli, which were considered pathologically more important, did not improve the patient's general condition. The remaining Streptococci maintained the disease and even deteriorated the clinical symptoms. In this case we may conclude that the Streptococci did have an etiological importance.

Treating 16 sows with urinary tract infections and/or acute puerperal disorders with an AMINOGLYCOSIDE-antibiotic there was a change of bacteria in 3 cases, too. The primary E. coli infection was followed by a Streptococcus-infection in 2 cases and by a Staphylococcus aureus-infection in 1 case during the initial treatment. Whereas E. coli strains were highly sensitive to the aminoglycoside-antibiotic, Streptococci were rather resistant (MHK-value 64 µg/ml), but Staphylococci were sensitive. Streptococci as well as Staphylococci were considered not having had etiological importance in the first clinical-microbiological diagnoses. Whilst treating with the aminoglycoside-antibiotic, which was only effective against E. coli, a lowering of the body temperature towards normal and an improvement of the general status was noticed in all 3 cases of change of bacteria. But the clinical symptoms of vaginitis or endometritis (purulent fluor) as well as the increased number of leucocytes in the swabs remained till the 8th day after starting the treatment. Then they disappeared without further therapy. We conclude from these patients that Streptococci and Staphylococci had low pathogenic properties causing local alterations only. Using AMPICILLIN as a single substance to treat acute puerperal disorders a change of bacteria was found, too. In some cases primary E. coli infections were followed by infections of Klebsiella, Proteus and Staphylococci.

Discussion and conclusions

The reported cases of change of bacteria demonstrate the complicated microbiological situation referring infections of the urogenital tract in the sow. It might be postulated that urinary tract infections and infections of the puerperal uterus are not caused by single infectious agents but rather by several facultative pathogenic one having different pathogenic properties. These may be found in low numbers together with apathogenic microorganisms in the vaginal vestibulum and even in the vagina ante partum or they may invade post partum. Even well directed antibacterial treatments by which could eliminated one specific species may allow multiplying several at first only in low numbers existing agents. As a result a change of bacteria may occur. But a disorder or a deterioration of the symptoms have not to be the consequence. The diagnostic and therapeutic problems resulting from these investigations are evident. Not only the predominating isolated species found in high numbers but also the only occasionally identified species have to be noticed in the bacteriological test of swabs. These, too, have to be included in the antibiogramme. The chosen antibiotics or chemotherapeutics must be effective referring these, too. This must be considered especially when only a single substance is used due to the classical principles of chemotherapy.

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