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PHD THESIS – SUMMARY

RESEARCH ON COWS INFERTILITY OVIDUCT AND CERVIX DUE TO DISEASE

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The PHD thesis entitled „RESEARCH ON COWS INFERTILITY DUE TO CERVIX AND SALPINX DISEASES" adresses to affections of two important genital segments, with insufficient data presented in national literature.

The level of productive performance in livestock is conditioned by the evolution of morpho-physiologic status of the genital apparatus in wich the disease affects the state of an organ, a device or system.

In this study we are trying to address the issues regarding the pathology of two genital segments: salpinx and cervix. The importance of this study lies in the fact that at least salpinx lesions may be incompatible with fertility.

Cervix diseases can be the starting point for the dissemination of ascendent diseases that may represent the first big upward of sperm survival.

Salpinx pathology was and is a major concern of researchers.

We consider the role of the salpinx in fecundation (sperm ascent, migration of the fertilized ovum). Cow salpinx disorders are difficult to detect and are clinically evident only in the chronic phase and especially for infertility due to bilateral damage. Semiological importance, therapeutic and for diagnostic, lies in the fact that veterinary gynecological investigations and datas regarding the correct detection of etiology, are relatively few.

The cervix is the "filter" between uterine downward or upward infections. We refer esspecialy to the possibility that ascending cervical infections are the starting point of endometritis, metritis emergence, etc.

Neglected in diagnosis, cervix is a filter that gives the first signal in an ascending infection. The more severe it is, the impact on morphological and physiological inflammatory changes is greater. So we believe that cervical inflammatory disease prevention is at least as important as prevention of uterine disease, which is closely linked.

The thesis includes a number of 206-pages written after the current methodological rules and a total number of 135 figures and 22 tables.

Part - I - (*stage of knowledge*), contains data from national and international literature and contains 59 pages classified into three chapters, supported by 39 figures and 5 tables. Chapter 1 presents data regarding the morphology and physiology of cow's genital apparatus. This chapter contains 16 figures. In Chapter 2, salpinx morphological

features, salpingian cycle and diseases encountered at this level are described. In chapter 3, morphological features of the cervix, cervical disease and cervical cycle are presented.

Part - II - *(personal research)* is carried out in over 147 pages and includes three chapters well highlighted. Iconography is represented by 96 figures and 17 tables. Each chapter has its material and working method, results and discussion and partial conclusions. The thesis concludes with a chapter of general conclusions and bibliography.

Our objectives try to detect some disorders located in the two uterine segment, salpinx and cervix. The main objectives of the research were:

- assessment of morphofunctional changes in cows with cervicitis and salpingitis;
- establishing the incidence of cervix and saplinx disorders, in relationship with different factors of variation;
- haematological and biochemical profile of the affected cattle;
- identification of bacterial flora with clinical implication;
- histopathological changes in the structure of organs, at slaughtered animals;
- Pelvic ultrasound aspects of the cows.

In Chapter 4, entitled *Material and research methods,* are described the research methods and biological material used. Investigations were conducted over a period of time quite long, because such genital diseases have a low frequency, are difficult to diagnose and are sometimes asymptomatic. If they are not expressed clinically, inflammatory processes affects the deep structures of the uterus and thus contributes to appearance of peri or parametritis.

Researches were conducted over a period of three years, January 2007 - January 2010, and were made in some dairy cows farms in Vaslui County.

Both farms complied with the general conditions regarding zoohygiene, maintenance, nutrition and productivity.

In Chapter 5, entitled *Clinical Research in salpinx and cervix diseases in dairy cows,* were monitored using semiology methods (gynecological history, inspection, palpation, thermometry) experimental and control groups of the two farms studied.

The sign observed in cows with puerperal problems (including harm to the cervix or salpinx) is the presence of intermittent leakage with purulent or mucopurulent character at

the lower corner of the vulva, perineal region and the hindquarters of the animal (when decubital position is adopted).

Of a total of 3032 cows, a number of 117 cows were diagnosed with various diseases of the cervix. Cervix inflammation (cervicitis) were found in 94 cases, representing 80.34% of all diseases seen at this level. Various cyst disease, some tumors, and cervical scars were observed in 18 cases, representing 15.39% of disease. Cervix abnormalities were identified in 4.27% of cases.

The examination of the oviducts throughout trans-rectal examination implies certain rigorous acknowledgements of gynecological topography and practical experience. This delicate segment of the genital system was very difficult and frequently impossible to examine throughout palpation, in normal conditions, due to the small dimensions. In our activity of practical researches, in many cases of the cows examined, the salpynx could not be examined trans-rectal.

A 60, 9% percent from a number of 248 cows sacrificed, presented different affections of the genital tract, from which 9, 27% presented lesions at the level of the salpynx.

The gynecological anamneses are the most utilized method for the orientation of the diagnosis of infertility. During our studies, 21, 4% from the examined cases, presented as only manifestation the infertility syndrome, with no other local or general associated symptoms. In all cases, the test of tubar obstruction was positive.

In chapter 5, are presented some laboratory investigations of hematologic and biochemical profile, microbiological and pathological analysis and pelvic ultrasound aspects.

Studies regarding haematological and biochemical blood profile. Productive level of dairy cows is determined by a number of factors, including the nutritional one.

Cows with salpingitis (Lot E1), presented at the hematological exam the following variations comparatively with the cows in lactation from lot M2 : erythrocytes were under the inferior limit of the specie 5,22±0,3 (lot E_1), respectively 5,70±0,89 (lot M_1), comparatively to the reference values (5,90-6,80); hematocrit and hemoglobin were situated between the reference limits, having inferior values comparatively to the values of the lot M1; the values of the erythrocytes constants were situated between

physiological limits for both lot E1 and lot M1, as well as the total number of leucocytes which were situated between the normal limits in both categories.

Cows with cervicitis (lot E_2), presented at the *biochemical exam of the blood* the following medium values comparative to the cows from witness lots M_2 and M_3: total seric proteins (g/dl), lower (6,7±0,6 comparatively to 8,3±0,6 respectively 9,14 ±0,5); seric albumins(%) increased over the superior limit of the specie (53,73±0,6 comparatively to 40,0±1,5 respectively 45,40±0,4); seric urea (mg/dl) with medium values under the inferior level of the specie (7,3±0,2); the alkaline reserve under the inferior limit of the specie in all the cows taken into study ; seric enzyme : ALT over the superior limit of the specie (U/l), (67,4±3,6); lower values of the calcemy and phosphoremy comparatively to the witness lots indicating certain hepatic and phosphor calcicum metabolism disorders.

Microbiological examinations of samples taken from salpinx and cervix.

Microbiological analysis showed the existence of an bacterial flora that confirms the idea that germs (from postpartum uterine infections) are acting together. So it can not be about a single uterine infection, but polymicrobial etiology.

From the total of 14 genres of microbial agents isolated from the cervix, 13 were bacteria and 1 was yeast. The bacteria species isolated in mixed cultures from the uterine secretions were the following: *Staphylococcusspp. Streptococcus spp Lactobacillus spp, Fusobacterium necrophorum., Arcanobacterium pyogenes, Bacillus cereus,. E. Coli, Pseudomonas spp.* and some anaerobe genres such as *Bacteroides spp.*

At the level of the oviducts, the microbiological contamination was encountered in a lower proportion comparatively to the uterus and the cervix. We can affirm the fact that 54, 5% from the examined cows were sterile from microbiological point of view.

The most efficient antibiotic tested on the total flora was Polimixina B and Kanamicyn. Tetracycline, Streptomycin, Penicillin, Trimetoprim and Ceftazidim presented also remarkable efficiency meanwhile Ampicilina, Oxacilina and Eritromicina manifested low efficiency or even none.

Ultrasound aspects in cervix and salpinx diseases.

At ultrasound examination the salpinx appears like a small formation (less than 0,5 cm diameter) and variable length (depending on the loop cut by ultrasound fascicles).

On its surface appears a slight hyperecougenous area and in salpinx mass were observed normal echogenic areas (various hipoechogenic shades).

The echographyc exam in cows with puerperal cervicitis evidentiated an increased in volume uterus, with hypoechogenyc wall, thicken, and the anechogen uterine content or anechogen with „spots in suspenssion.

In the cases with tubar obstruction, the physiological space that permits the migration of the male and female gamets and eventually the zygote's was blocked. Cows with this type of bilateral affection are sterile.

The ultrasonographyc surveillance of the genital system requires proper knowledge and skills. The approachment of the genital segments with the echograph follows several steps.

The cows that presented salpingitis or cervicitis, had in general smooth ovaries, with regular outline, increased echogenity probably due to the increased proportion of conjunctive tissue in the mass of the ovary.