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تغییرات باکتریولوژیک وهیستولوژیک رحم گاوان مبتلا به آندومتریت مزمن درمان شده با PGF2α

دکتر پرویز هورشنی* دکتر محمود بلورچی** دکتر ایرج سهرابی حقدوست*
دکتر مجید عدالت نمین*** دکتر شمس الملوک خواجه نصیری***

خلاصه

تغییرات باکتریولوژیک و هیستولوژیک رحم در ۲۳ راس گاو شیری نژاد هلشتاین با سابقه آندومتریت مزمن مطالعه شد. گاوان در طول سال ۱۳۶۵ جهت درمان به بخش مامائی و بیماریهای تولید مثل دام بیمارستان شماره ۱ دانشکده دامپزشکی دانشگاه تهران آورده شده‌بودند. از رحم گاوان، قبل و بعدازدرمان با یک آنالوگ PGF2α در خلال فازلوتئال سیکل استروس، نمونه‌های باکتریولوژیک و هیستولوژیک گرفته شد. انواع میکروارگانیسم‌ها از رحم جدا شد. در بعضی موارد پس از درمان جمعیت باکتریائی کاهش یافت لیکن باکتریها و قارچهای دیگری جانشین آنها شد. فقط ۸ راس از ۲۳ راس گاو (۳۵٪) درمان شدند. بروسلا آبورتوس از رحم یک راس گاو که از نظر سرمی سه مرتبه پیاپی منفی اعلام شده بود، جدا گردید.

بیست و یک نمونه بیوپسی (۹۱٪) قبل از درمان تغییرات هیستولوژیک شدید نشان داد. بعداز درمان در ۸ نمونه بهبودی چشمگیری مشاهده شد (۳۴/۵٪). تعداد ۹ نمونه تغییرات پاتولوژیک خفیفی داشت (۳۹٪) و در ۴ نمونه تغییری مشاهده نشد (۷۵/۵٪).

نتیجه اینکه درمان مکرر با PGF2α در فازلوئتال سیکل استروس درگاوهائی که مبتلا به آندومتریت مزمن هستند موجب کاهش جمعیت باکتریائی رحم شده و واکنش‌های التهابی آندومتریوم را کاهش میدهد.

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* بخش مامائی و بیماریهای تولید مثل دام. گروه آموزشی علوم درمانگاهی. دانشکده دامپزشکی دانشگاه تهران. تهران، ایران
** گروه آموزشی پاتوبیولوژی دانشکده دامپزشکی دانشگاه تهران. تهران. ایران
*** سازمان دامپزشکی کشور. تهران، ایران

10- Roberts,S.1986: Veterinary obstetrics and Genital Disease.3rd.ed. Published by the Author,PP. 538-544, 559-569.

11- Thens,T., Kupfer,R., Leiser,R. and Konig,H.1979: Endometritis in cattle from the clinical,pathological and histological findings in the uterus of the cow.Sentral blatt fur veterinar medizine.26 A(B): 614-634.

12- Tsakalof,P.1985: Diagnosis of endometritis,a comparison between clinical and histopathological findings in the uterus of the cow.Dtsch.Tierarztl.Wschr; 85:474-477.

References

1- Carter,G.R.1975: Diagnostic procedures in veterinary microbiology. 2nd ed. Charles C Thomas, P.105.

2- Griffin,J.F.I;Hartigan,P.J. and Nunn,W.R.1974:Non specific uterine infection and bovine fertility II. Infection patterns and endometritis before and after service.Theriogenology,1(3):107-114.

3- Griffin,J.F.I ; Murphy,J.A ;Nunn,W.R. and Hartigan, P.J.1974: Repetitive in vivo sampling of the bovine uterus under field conditions.B.Vet.J 130(3):259-264.

4- Jackson,P.S.1977: Treatment of chronic postpartum endometritis in cattle with cloprostenol.Vet.Rec. 101:441-443.

5- Jones,T.C.and Hunt,R.D.1983: Veterinary pathology.5th ed. Lea & Febiger P.1530.

6- Karg.H.,Schallenberger,E.1982: Factors influencing fertility in the postpartum cow. 1st ed.Martinus Nijhoff publishers.PP.30-52,479-508.

7- Laing,J.A.,1979: Fertility and infertility in domes - tic animals. 3rd ed. Bailiere,Tindall,PP.199-201.

8- Paisley,L.G.,Mickelsen,W.D.,Anderson,P.B.1986:Mecha - nisms and therapy for retained fetal membranes and uterine infections of cows: A review.Theriogenology. 25(3) 353-381.

9- Remington,R.D., and Schork,M.A.1970: Statistics with application to the biological and health sciences. Prentice hall inc.P.299.

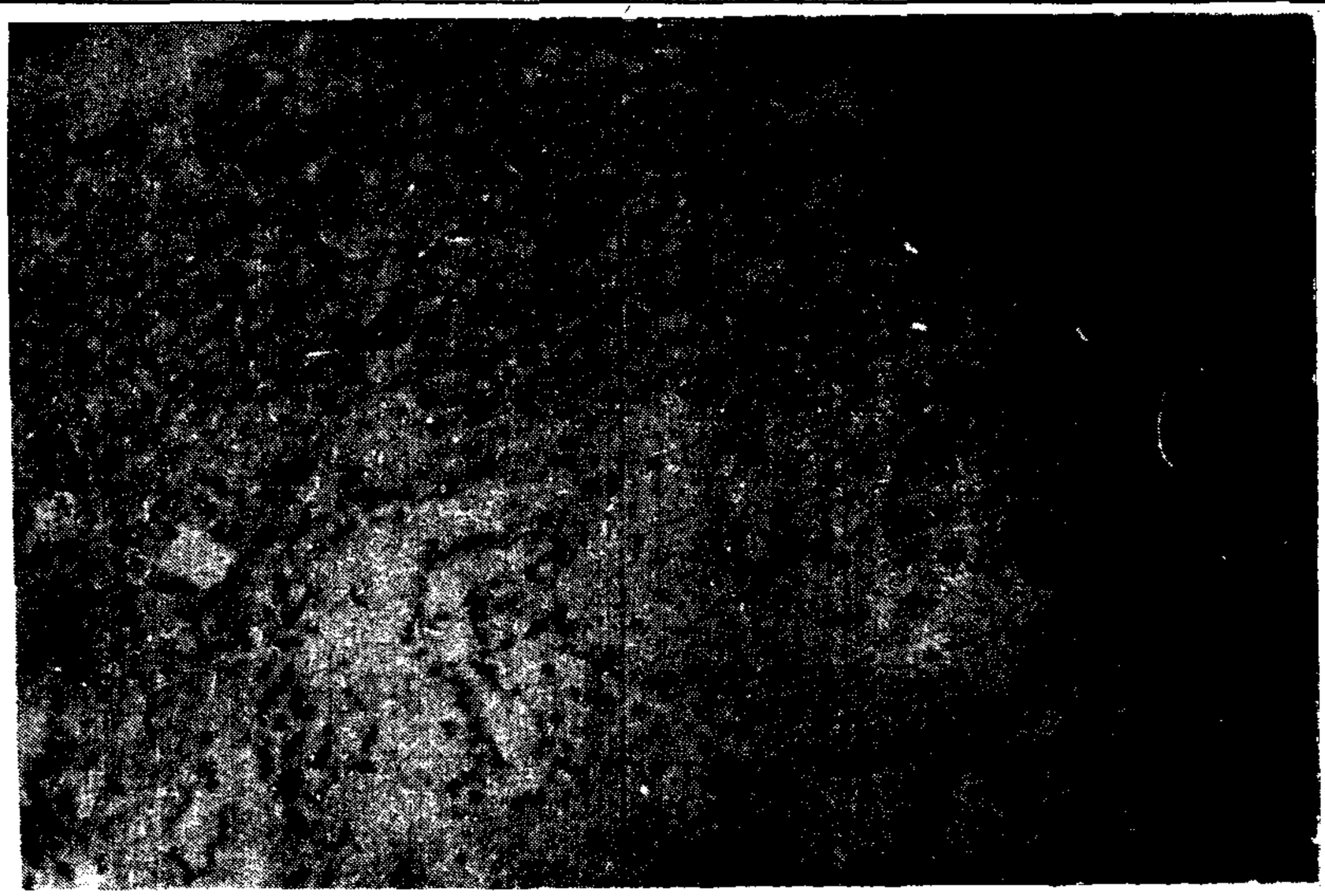

Fig 6: Reduction of leukocyte in filtration following treatment

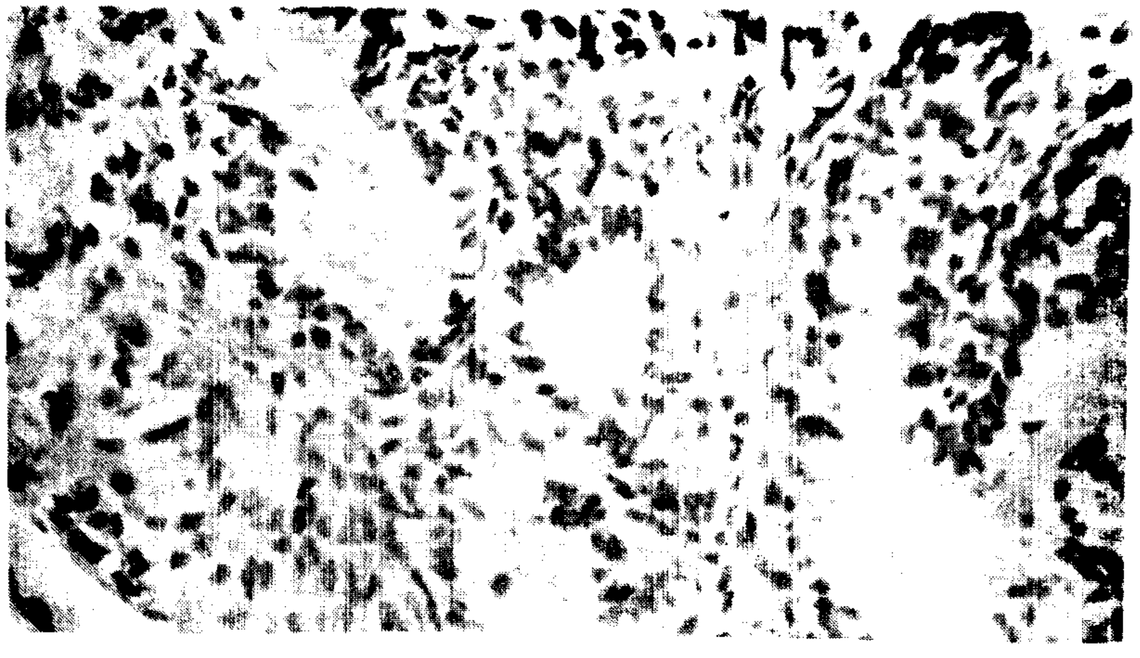

Fig 4: Reduction of perigladular fibrosis and cystic dilation of treatment

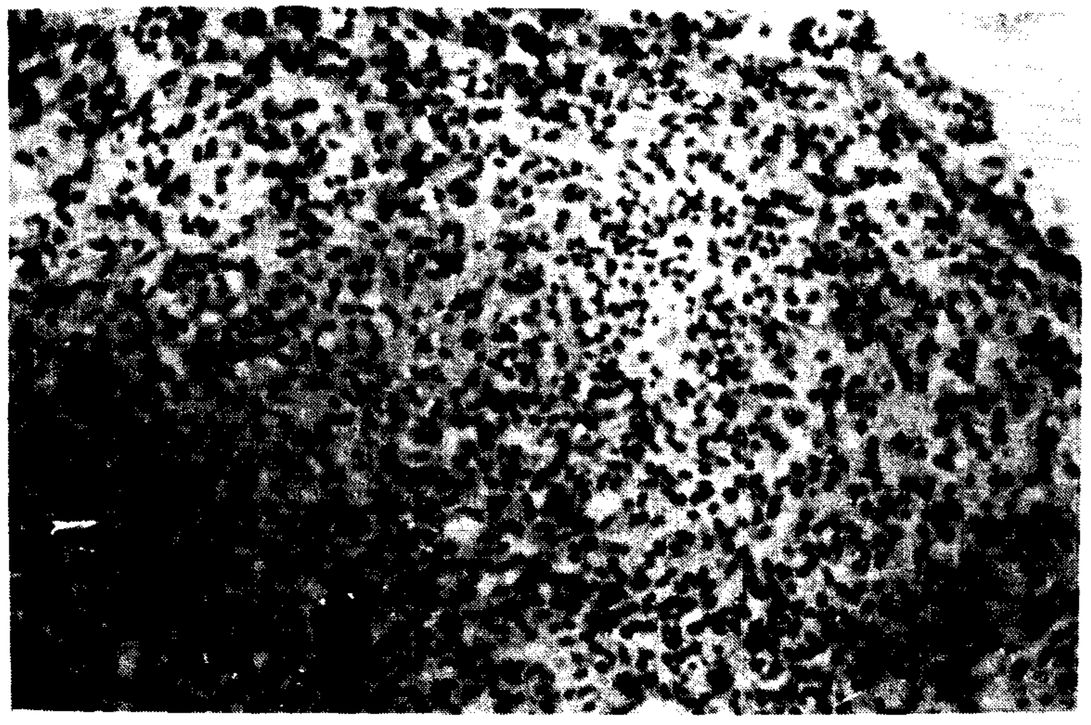

Fig 5: Stromal leukocyte in filtration of uterus prior to treatment

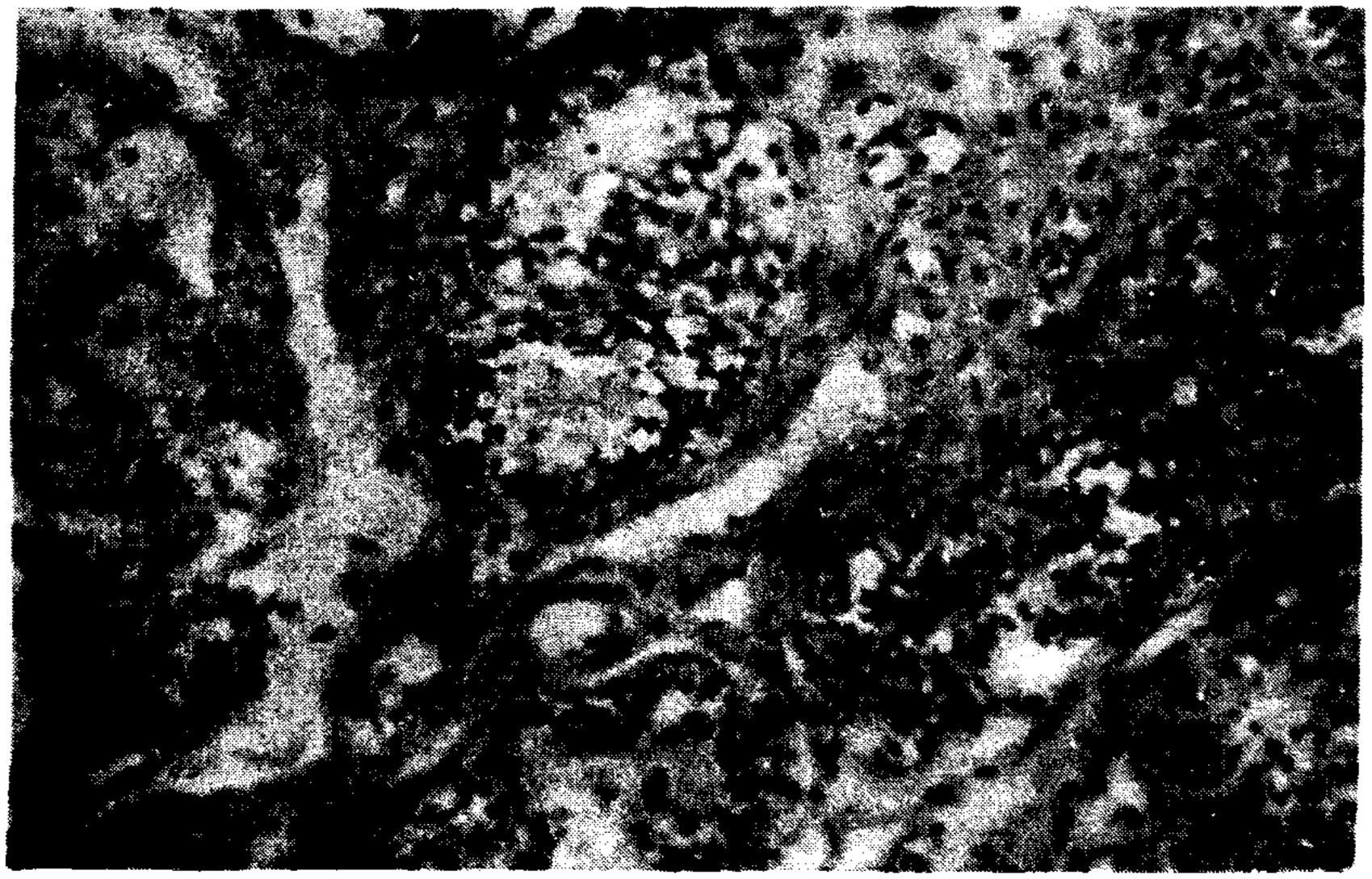

Fig 2: Cystic dilation of endometrial glands with moderate fibrosis prior to treat-

Fig 3: Reduction of priglandular fibrosis and cystic dilation after treatment with PGF2 (H.T.E x 400)

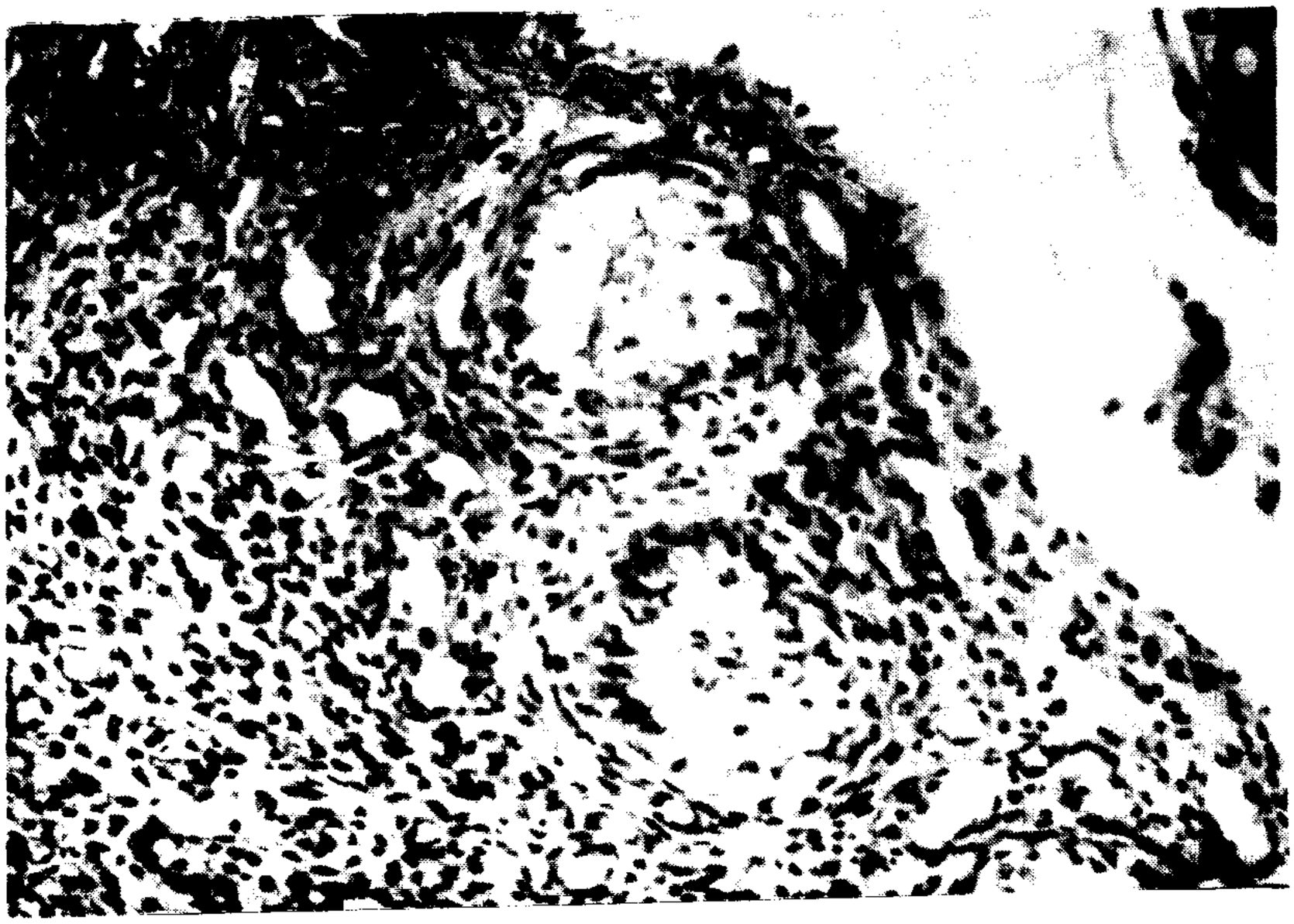

Fig 1: Periglandular and perivascular fibrosis with leukocytic infiltration of uterus prior to treatment with PGF2α in a cow (H.T.E x 400)

Table (5)- The association between histopathological changes* and presence of the microorganisms in samples taken from the uteri after treating the cows with PGF2 α . Faculty of Vet.Med.Univ. of Tehran-IRAN

Microorganisms	Histopathological changes		Total
	Present	Absent	
Present No(%)	3(13)	12(52)	15(65)
Absent No(%)	2(9)	6(26)	8(35)
Total	5(22)	18(78)	23(100)

*The association was not statistically significant

Table (4)- The *association between histo-pathological changes and presence of the microorganisms in samples taken from the uteri prior to treating the cows with PGF2α . Faculty of Vet.Med.Univ. of Tehran,IRAN

Microorganisms	Histopathological changes		Total
	Present	Absent	
Present No(%)	23(100)	—	23(100)
Absent No(%)	—	—	—
Total	23(100)	—	23(100)

* The association was not statistically significant

Table (3) -Lesions of the uteri prior to and after treating the cows with PGF2α in luteal follicular phase. Faculty of Vet. Med. Univ. of Tehran- IRAN

phase	Uterine lesions						Total
	Prior to treatment			After treatment			
	Present	Reduce	Absent	Present	Reduce	Absent	
Luteal No(%)	21(91)	—	—	4(17.5)	9(39)	8(34.5)	21
Follicular No(%)	2(9)	—	—	—	—	2(9)	2
Total							23

Table (2)- Occurrence of different groups of microorganisms in the uteri of repeat breeder cows prior to and after treatment with PGF2^{a}. Faculty of Vet.Med.Univ. of Tehran. IRAN

	Microorganism groups			No isotation	Total
	specific	Non-specific	Non pathogenic		
Control No.(%)	4(17.5)	14(61)	5(21.5)	--	23(100)
Treatment No.(%)	--	13(56.5)	2(8.5)	8(35)	23(100)

Table (1) -Microorganisms isolated from the uteri in repeat breeder cows prior to and after treatment with PGF2 α . Faculty of Vet.Med. Univ. of Tehran. IRAN.

Type of the microorganism	Prior to treatment No.(%)	After treatment No.(%)
B.abortus & E.coli	1(4.5)	-
Mycoplasma sp. & Aspergilus sp.	1(4.5)	-
Mycoplasma sp.	1(4.5)	-
C.fetus, C.bovis & B.macerance	1(4.5)	-
E.coli	11(48)	6(26)
C.pyogenes	1(4.5)	-
P.aeroginosa	-	1(4.5)
Staph. sp	-	2(4.5)
Strep. sp	-	2(8.5)
Aspergilus sp & yeasts	2(8.5)	1(4.5)
B.macerance	5(21.5)	3(13)
Negative	-	8(35)
Total	23(100)	23(100)

tool. However, it may not be always practical in farm. Shortening the oestrus cycles regularely, with a luteolytic agent(PGF2α)increases the uterine conctractility, changes the abnormal endometrial tissue to the normal state and reduces the population of the microortanisms. Intrauterine infusions may introduce bacteria and fungi into the uterus that are mostly persistant to the available antibiotics.Thus, treatment of such cows with PGF2α may remain the method of choice specially in valuable animals.

all 23 uteri(100%) showed infiltration of lympho - cytes in the endometrium, of which only 4 uteri(17.5%) did not respond to the treatment and in 8 uteri(35%) there was a significant reduction in lymphocytes.Seven uteri(30.5%) showed neutrophils in aboundance before treatment and all disappeared in response to the treatment except one(8.5%). Infiltration of the eosinophils in the endometrial stroma was found in 3(13%) of the uteri which was still present in two (8.5%) after treatment.

The uterine lesions were present in all 21 (91%) of the specimens taken in the luteal phase before treatment. These lesions were still present in 4 (17.5%), reduced to 9(39%) and completely disappeared in 8(34.5%) of the uteri after treatment.Two specimens(9%) which were also taken in follicular phase before treatment, were com - pletely free of these lesions after treatment(table 3).

Data which are presented in table 4 and 5 show that the association between histopathological changes and the presence of the microorganisms in the uteri was not statistically significant both prior to and after treating the cows with PGF2α .

In conclusion, since the adverse economic conse - quences of chronic endometritis affects the management of dairy herds, it is very important to confirm the problem. Bacteriological examination may not be very practical and is less reliable than uterine biopsy. Uterine biopsy may be applied as an effective diagnostic

others (3).

Brucella abortus was isolated from the uterus of three consequetive seronegative tests.This cow had a previous abortion.This has also been reported by others (2) Escherichia coli was isolated from 11 uteri(48%) prior to treatment and resisted in only 6 ones(26%)after treatment(table 1).

In 4 (17.5%), 14(61%) and 5(21.5%) of the uteri, specific(B.abortus, C.fetus etc.) non-specific and non pathogenic microorganisms were isolated respectively prior to the treatment. However, after treatment specific pathogens were not isolated. In 13(56.5%) and two(8.5%) uteri, non-specific and non pathogenic microorganisms were still present (table 2). Presence of non-specific bacteria in the uterus around the period of mating may not be very important in producing infertility.However, the duration of infection is very important(6).

Histopathological examination of the endometrium showed significant alterations in the tissue after treatment.Preglandular fibrosis(fig.1) of the endometrium was observed in 16(69.5%) of the specimens which persisted in 6(26%) after treatment. In 6 specimens(26%), cystic dilation of the endometrial glands(Fig 2) was present prior to treatment and all disappeared following treat - ment. Fibrosis around the endometrial blood vessles of 4(17.5%) uteri was reduced to one(4.5%) and thrombosis of these vessles which was present in 2(8.5%) specimens, disappeared after treatment (fig 3).

Uterine tissues were collected in 70 per cent alcohol or 10 per cent formalin solution to the laboratory for histopathological studies.Cows were then observed for signs of Oestrus and the nature of discharge from the vulva. The same sampling procedures were used on day 11 or 12 after treatment, when a mature CL could be palpated in an ovary.

Data were subjected to chi-square test for statistical analysis(9).

Results and Discussion

Reproductive records showed that all the cows, except one, had previous normal parturitions.However, repeat breeding was the common untreated disorder involving nearly 65 per cent of the animals.The average interval between calving and sampling was approximately 8.3 months. In some cases the cows had been infertile for one to two years and mostly between 4 to 6 years of age(ten out of 23 cows, 43.5%).

Sixty one per cent of the cows showed a cloudy mucus discharge. However, 26 per cent and 12 per cent of the animals had a muco-purulant and a purulant discharge from the vulva respectively. Cows were generally cyclic, with regular(21 to 23 days) oestrus cycles.

After treatment, the population of the microorganisms was generally reduced in the uteri but it was replaced by other organisms in some cases(table 1).This indicates that a secondary contamination must have occurred during the sampling that has been also shown by

metrial changes, both bacteriologically and histologically in repeat breeder cows clinically suspected to have chronic endometritis, prior to and after treating the animals with a prostaglandin F2α analogue(4).

Material and Methods

Twenty three Holstein cows, between 2.5 and 9 years of age,with the history of repeat breeding and long standing(Chronic) endometritis were selected from several herds in Tehran Province. All the cows had been chosen to cull for managemental purposes due to infertility.Careful study of the reproductive records revealed that the animals have mucopurulent discharges from their genital tracts after the last parturition.

All the animals were palpated rectally to determine their reproductive status. Twenty one cows were in diestrus and the remaining two were in metestrus of the oestrus cycle.

Cows in diestrus were treated with 2ml. of a PGf2α analogue(cloprostenol,"Estrumate"ICI.), immediately after taking bacteriological samples and biopsies from the uterus by a sterile well-protected biopsy instrument. Cows in metestrus were also sampled but were treated with 2ml. PGF2α in diestrus.Bacteriological samples were cultured in the appropriate media(Blood agar, Brucella agar, Mycoplasma and Saboroux agars and other routine isolating media) and cultures were studies(1).

negative cultures. Brucella abortus was isolated from a uterus despite the cow being seronegative on three con - sequetive tests.

Twenty one specimens had severe histological changes (91%) before treatment.After treatment 8 specimens showed marked improvement(34.5%), 9 specimens showed minor alterations(39%) and 4 specimens remained unchanged (17.5%). It was concluded that repeated prostaglandin therapy in luteal phase of the oestrous cycle could reduce the bacterial population and improve the infla - mmatory reactions of the endometrium.

Introduction

Endometritis has been reported to be the most common cause of the reproductive failure and infertility in the cow(10).Abortion, dystocia, trauma to the birth canal , retained placenta and many other disorders have been shown to be. responsible for the condition(5,6,7,8).How- ever, it may occur following normal parturition(7).Rectal palpation and vaginal inspection are not always reliable methods to diagnose the condition..Bacteriological samples and histological specimens from the uterus have been demonstrated to have some value in the diagnosis. Both physiological and pathological alterations of the endometrium have been studied in the cow and a careful histo-pathological picture of the condition has been presented(11,12).

The aim of the present study was to compare endo -

Bacteriological and Histological Alteration of the Uterus Injected with PGF2α to treat chronic endometritis in cows.

Hovareshti ,P* Bolourchi*,M*
Sohrabi Haghdoost,I.** Edalat,M*
Khajehnasiri.S***

Summary:

Bacteriological and histological changes of the uterus were studied in twenty three Holstein dairy cows with the history of chronic endometritis.The cows had been presented for treatment to the Large Animal Clinic, Faculty of Veterinary Medicine in Tehran during the year 1986.

Bacteriological swabs and histological specimens were prepared from the uteri before and after treating the animals with a PGF2α analogue during the luteaL phase of the oestrous cycle.

A wide variety of microorganisms were isolated from the uteri. In some cases the population of the bacteria was reduced and replaced with some other bacteria and fungi after treatment.Only 8 cows out of 23 cases(35%) responded to the treatment on the basis of

* Department of clinical sciences.Faculty of Vet.Med. Univ.of Tehran.Tehran-IRAN
** Department of pathobiology.Faculty of Vet.Med.Univ. of Tehran.Tehran-IRAN
*** Veterinary Organization,Tehran-IRAN