

Do oxytetracycline and PGE1 have protective effect against harmful effects of hysterosalpingography on endometrium? An experimental study

Dr. REMZİ ATILGAN

INTRODUCTION

- Radiation initiates synthesis of reactive oxygen molecules (ROS) in cells and tissues.
- ROS causes damage in DNA and membrane lipids, which is called lipid peroxidation.

Taysi et al. 2002

- Lipid peroxidation stimulates collagen synthesis in cell cultures and causes fibrosis in tissues

Lee et al. 1995

- Cells counteract against ROS with
 - ✓ antioxidant enzyme systems → superoxide dismutase, glutathione peroxidase
 - ✓ antioxidant hormones → melatonin
 - ✓ antioxidant drugs → PGE-1, Vitamin E, Vitamin C, Tetracycline

Sapmaz et al. 2003, Sapmaz et al. 2002

- PGE1 is a vasodilator prostaglandin which decreases oxygen consumption and superoxide anion production in damaged tissues. PGE1 arrests apoptosis induction

Vargas et al. 1995, Olthoff et al. 1991, Kawamura et al. 1997

- Tetracyclines decreases apoptosis and represses ROS production.

Orsucci et al. 2009

- PCNA is a reliable marker for detection of endometrial cell proliferation.
- The expression of PCNA in the endometrium of the rat has been shown to increase from diestrus to pro-estrus and disappear at estrus.
- In women, the PCNA index of the glandular epithelium has been reported to increase during the follicular phase and to decrease during the luteal phase.

Chatdarong et al. 2005

Goal: To investigate whether oxytetracycline and PGE1 have protective potential for prevention of degenerative effects of hysterosalpingography on endometrium.

Materials and Methods

- Wistar Albino female, 12-14 weeks old, 190-220 g, adult, 28 rats were randomly divided into four groups.
 - Group1 (n=7): only laparotomy
 - Group2 (n=7): laparotomy + 0.1 mL Lipiodol into both of uterine horns + X ray application
 - Group3 (n=7): laparotomy+intraperitoneal 10 mg/kg oxytetracycline +15 minutes later 0.1 mL Lipiodol into both of uterine horns
 - Group4 (n=7):laparotomy+intraperitoneal 200 mcg/kg PGE1 + 15 minutes later 0.1 mL Lipiodol into both of uterine horns.

- After these procedures, whole body radiation were applicated 3 times with 2 minutes intervals in group 2,3 and 4. And closure of abdomen was done.
- Three hours later, relaparotomy and bilateral uterine horn excision were performed on all of the rats.
- Uterine horns were fixed with 10% formaldehyde.
- Cytoplasmic immune staining and TUNEL staining were scored as follows: 0=absence, 1=minimal, 2=mild and 3= severe.
- Statistical analysis were done with Kruskal Wallis test and Mann Whitney U test.

RESULTS

- Congestion, displasia and apoptosis scores in endometrial glands of group2 were significantly **higher** than of group1,
- but PCNA activation of group2 was significantly **lower** than of group1.



- Uterine horns on HSG

- Congestion and displasia scores of group 3 were significantly **higher** than of group 1
- apoptosis scores of group 1 and 3 were **similar**
- PCNA immune reactivity was **low** in group 3.

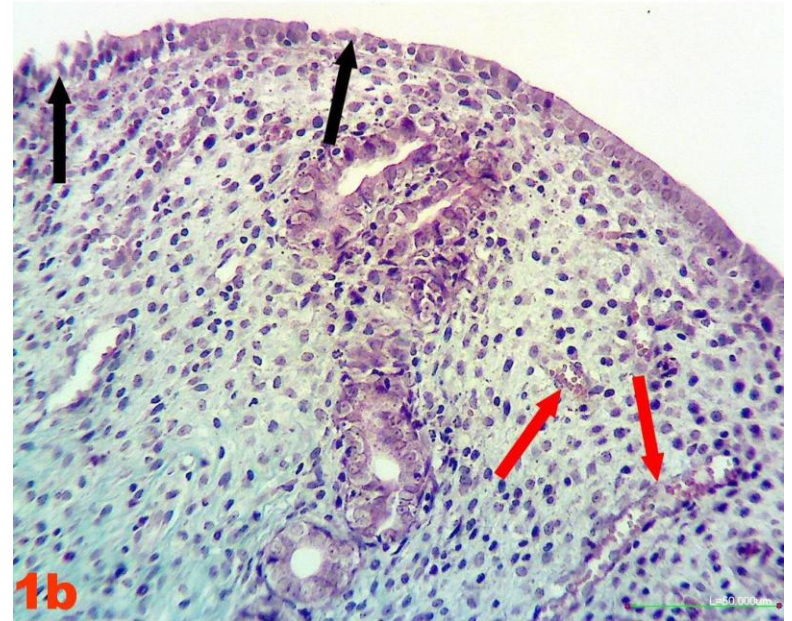
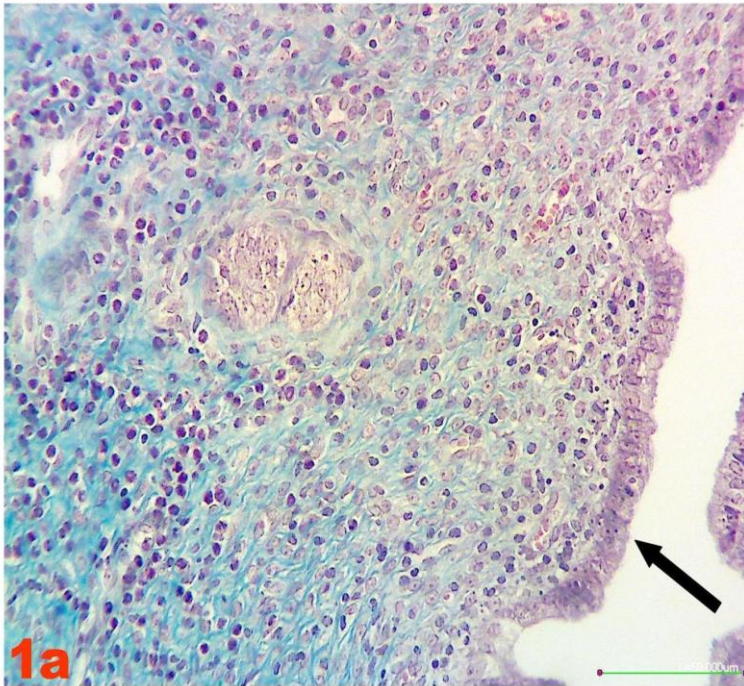


- Distribution of contrast in peritoneal cavity

- Epithelial degeneration score of group 4 was significantly **higher** than of group1, but there was **no difference** for scores of congestion and apoptosis.
- PCNA reactivity of group 4 was lower than of group1.

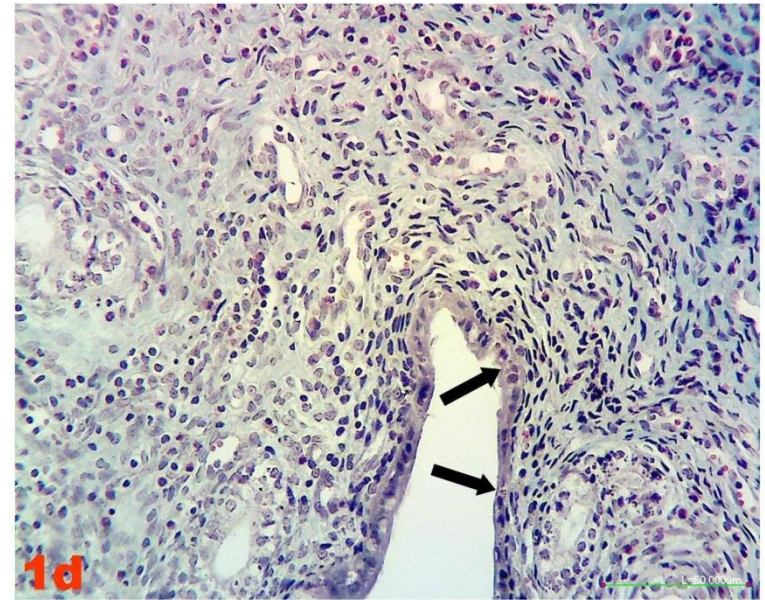
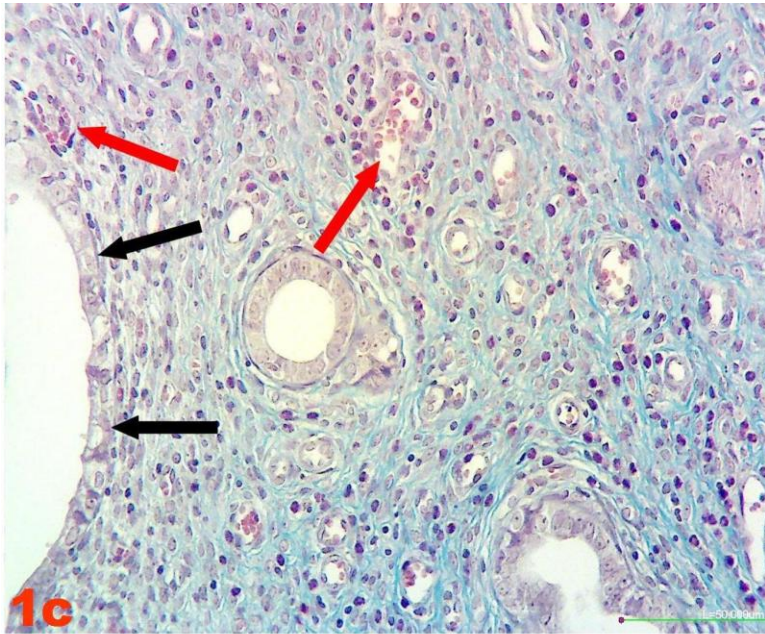
HISTOLOGICAL FINDINGS

(Masson's trichrome staining)



- G1; normal uterine tissue, black arrow= epithelium

- G2; increased epithelial degeneration and congestion (black arrow); red arrow= congestion



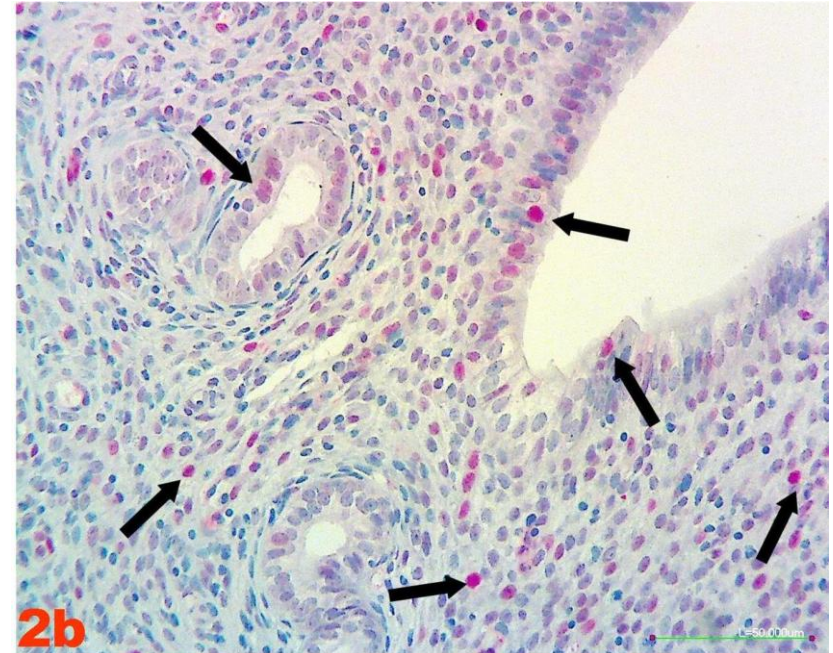
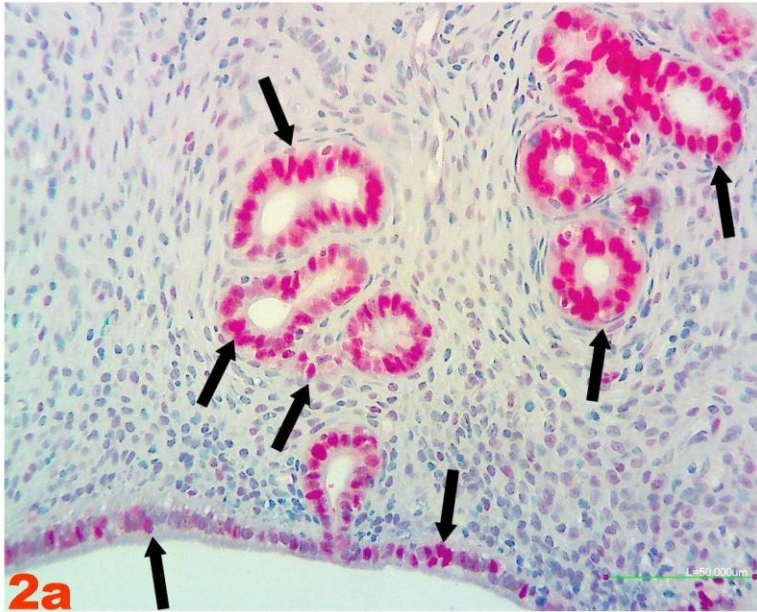
- G3; epithelial degeneration and congestion are similar with G2.

Black arrow= epithelium,
Red arrow= congestion.

- G4; decreased congestion, but epithelial degeneration is going on.

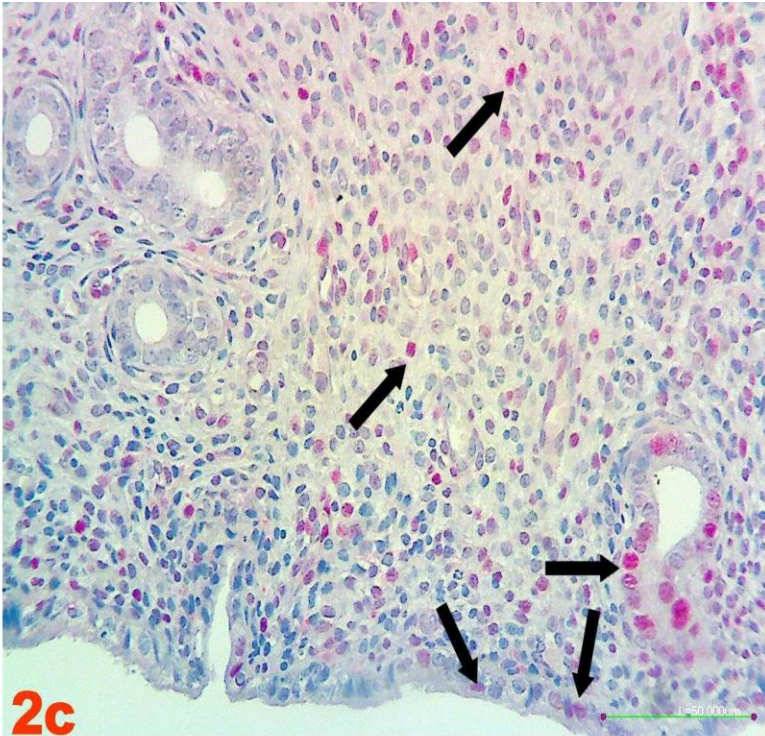
Black arrow= epithelium

IMMUNOHISTOCHEMICAL FINDINGS

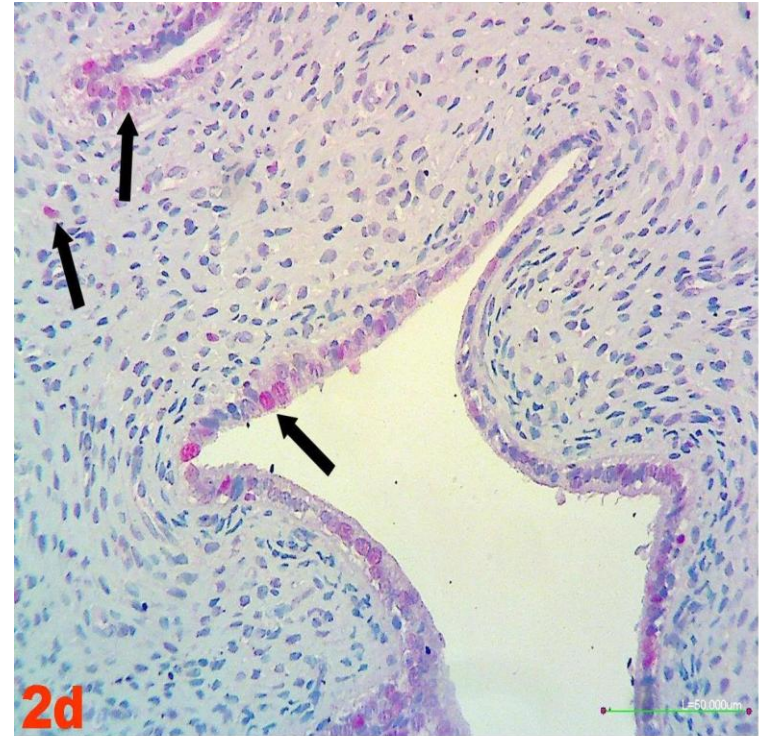


- G1; PCNA staining with +3 intensity

- G2: severely decreased PCNA staining
- +1 intensity

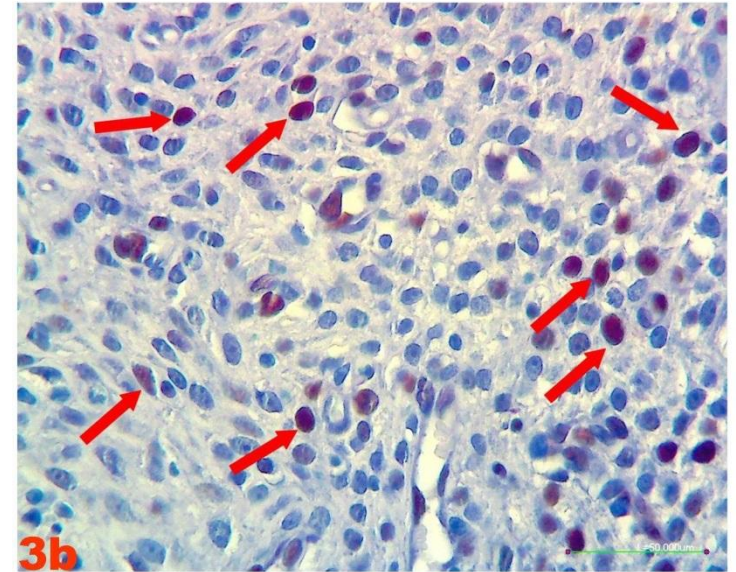
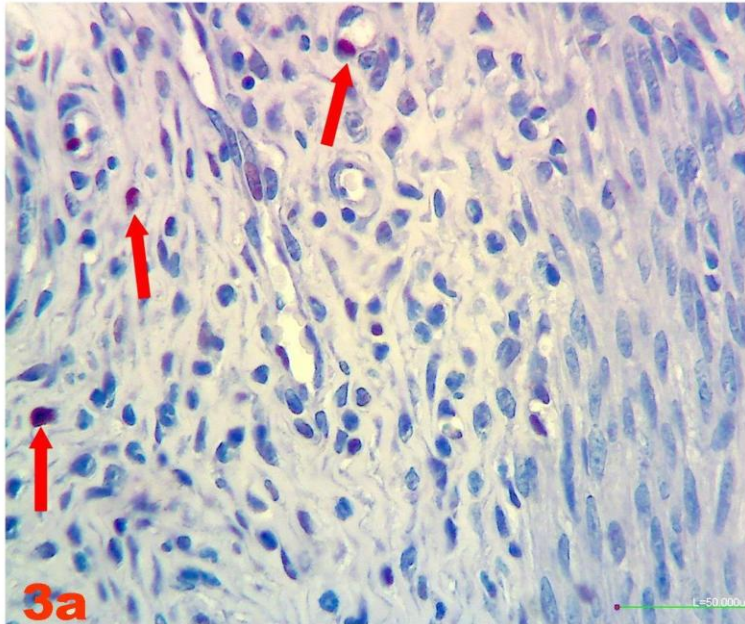


- G3; decreased PCNA staining +1 intensity



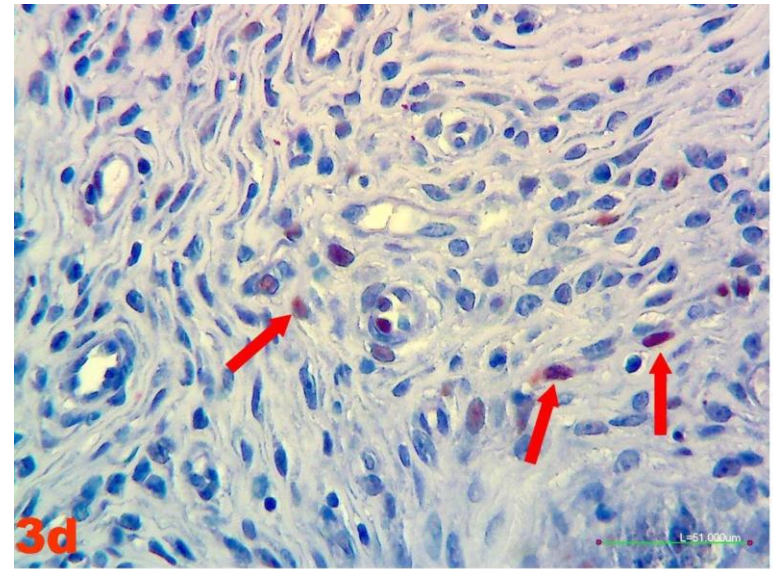
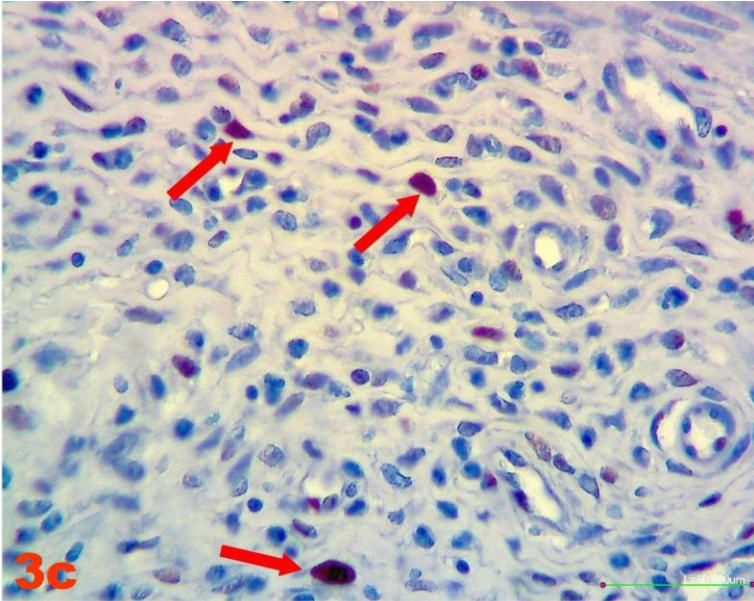
- G4; decreased PCNA staining +1 intensity

TUNEL FINDINGS



- G1; TUNEL staining intensity is +1

- G2; increased TUNEL staining +3 intensity



- G3; decreased tunel staining +1 intensity

- G4; decreased tunel staining +1 intensity

CONCLUSION

- Oxytetracycline and PGE1 were insufficient for prevention of endometrial degenerative effects of hysterosalpingography.

THANK YOU

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