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 $\rightarrow$ superoxide dismutase, glutathione peroxidase
  - antioxidant hormones $\rightarrow$ melatonin
  - antioxidant drugs $\rightarrow$ PGE-1, Vitamin E, Vitamin C, Tetracycline

  Sapmaz et al. 2003, Sapmaz et al. 2002

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

• 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.
  - Group 1 (n=7): only laparotomy
  - Group 2 (n=7): laparotomy + 0.1 mL Lipiodol into both of uterine horns + X ray application
  - Group 3 (n=7): laparotomy + intraperitoneal 10 mg/kg oxytetracycline + 15 minutes later 0.1 mL Lipiodol into both of uterine horns
  - Group 4 (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 applied 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 group 1, but there was **no difference** for scores of congestion and apoptosis.

• PCNA reactivity of group 4 was lower than of group 1.
**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

- Remzi Atılıgan
- Tuncay Kuloğlu
- Melike Başpınar
- Yaprak Kandemir
- Özgür Arat
- Uğur Orak
- Zehra Sema Özkan
- Mehmet Şimşek
- Ekrem Sapmaz