

News & Comments

Multi-Drug Resistant Induced Intra-uterine infection in Rats

Abdul Khadir Nabeel

Preterm birth occurs when a baby is born before the 37th week of pregnancy, and it is a major obstetric and health issue. In both developing and developed countries, it is one of the leading causes of newborn mortality and morbidity. Preterm labour and delivery were induced by systemic administration of different bacteria or bacterial compounds to pregnant animals. Preterm birth is caused by inoculation with the bacterial toxin or live bacteria, according to animal model research.

The general method through which pathogenic bacteria acquire entry to the uterine cavity of women has been discovered to be ascending vaginal bacterial infection. Inflammation and intrauterine infection are two potential risk factors for preterm newborns developing neurological problems. Preterm birth is strongly linked to genital tract infection, with roughly 25-40% of preterm birth being caused by it.

The study's major goal was to look at intrauterine inflammation-related brain damage and preterm labour in Albino rats.

The study was carried out at the Department of Obstetrics, Central Hospital Affiliated with Shandong First Medical University Lab, China. Albino rats were raised and treated according to laboratory experimental animal care guidelines. Female rats weighing between 250 and 350 g were permitted to mate with powerful males when they were between the ages of 8 and 14. Vaginal plug analysis was performed on all female animals to confirm mating. In phosphate-buffered saline, albino rats were anaesthetized with 10-15 mg kg⁻¹ b. wt. of a 2.5% (v/v) tert-amyl alcohol and 2.5% (w/v) tribromomethyl alcohol mixture. When progesterone was given intrauterine, the right uterine horn was usually identified, and progesterone was injected between the fetuses. After 18 hrs of intrauterine infection with the specified bacterial pathogens, albino rats were anaesthetized.

Live *E. coli*, *S. pyogenes*, and *F. nucleatum* at 1.51012 CFU mL⁻¹ as well as heat-killed germs, were used to infect the experimental animal. Preterm labour was induced by both live and heat-killed bacteria. Brain samples were taken from both the experimental and control rats to study brain inflammation. When comparing control and *S. pyogenes* treated mice, the amount of IL-1 β in the brain increased from 0.18 \pm 0.05-0.43 \pm 0.03, which was significantly higher than other animals treated with *E. coli* (0.39 \pm 0.05 ng mg⁻¹) and *F. nucleatum* (0.26 \pm 0.04 ng mg⁻¹). The study of human subjects and animal models demonstrated that premature birth is caused by bacterial infection. Because of their related lipopolysaccharide toxins, the bacterial pathogens *E. coli*, *S. pyogenes*, and *F. nucleatum* were chosen



for this study, and these strains were utilized to determine inflammation-mediated preterm delivery.

The data revealed that using progesterone to reduce the incidence of premature delivery in experimental animals is beneficial. Probiotics, medicinal herbs, and PDE-4 inhibitors have recently been recommended as ways to prevent premature birth. Progesterone's effect on Toll-like receptors has been studied before. These receptors were involved in both the modulation and the beginning of the inflammatory response, and their regulation could affect labour. In one study, mice were given progesterone before being placed in an intrauterine environment, and the induced effect of LPS on the placenta and cervix receptors was monitored.

Preterm labour was induced in the experimental animals by both live and heat-killed bacteria. The production of cytokines was increased by pathogenic microorganisms. Preterm labour and bacteria-induced preterm delivery in Albino rats were linked to intrauterine inflammation and brain impairment, according to the findings.

JOURNAL REFERENCE

Shang, H., J. Yu, S. Li and S. Li, 2022. Multi-drug resistant pathogenic bacteria caused intrauterine infection in albino rat mediated preterm labour. *Int. J. Pharmacol.*, 18: 307-314.

KEYWORDS

Intra-uterine infection, Albino rats, preterm birth, bacteria-induced preterm, delivery, Multi-drug resistant pathogenic bacteria

