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Is Aspirin Teratogenic to Hepatocytes ?

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SUMMARY

Aspirin was administered orally to Sprague Dawley rats in dosage of 250mg/kg of body weight. Degenerative changes were seen in fetal hepatocytes which were more marked when drug was given during second and third weeks of gestations in pregnant rats.

INTRODUCTION

Salicylates have been the most widely studied of non narcotic analgesics in pregnancy, and in last many years evidence has accumulated indicating that their ingestion in pregnancy may have adverse effects on mother and her child. Salicylates in particular acetylsalicylic acid (aspirin) are undoubtedly effective in the relief of pain, reduction of fever and control of inflammation (as in rheumatic diseases). They have been prescribed freely by medical profession and have also been available over the counter[1].

Teratogenic properties of aspirin have been known for many years which have been supported by many workers[2-5]. The central role of liver in drug metabolism set the stage for drug related hepatotoxicity. Most non steroidal anti-inflammatory drug reactions are hepatocellular, which make the liver a susceptible site for drug related injury[6].

An experimental study was designed to see effect of aspirin on hepatocytes of developing fetus.

MATERIALS AND METHODS

Twenty four adult female albino rats (Sprague Dawley) were obtained from National Institute of Health Islamabad. They were kept at animal house of Post Graduate Medical Institute Lahore, and were fed on chick feed no. 3. Water was provided ad labitum. After conception female animals were divided into control and experimental groups.

Control group

Group A was kept as a control, containing 6 animals which were fed on normal diet through out pregnancy. No drug was given to the control group.

Experimental groups

Experimental groups were divided into three groups: B, C and D. They were given oral dose of aspirin 250mg/kg of body weight during first, second and third weeks of gestation respectively.

After delivery of the control and experimental groups, their offsprings were selected at random (5/adult rat). Livers were dissected out from newborns of each group, and were fixed in 10% formaldehyde solution for at least 12 hours. The livers were processed in an autoprocessor.

Blocks were made, cut, stained and mounted. Stains used were hematoxylin and eosin.

RESULTS

Control group A

This group showed normal hepatic architecture comprising of hepatic lobules with a central vein in the center and portal triads at the periphery.Portal triads were not well marked. Hepatic lobules were also not well demarcated. Polyhedral cell cords were seen organized more near the central vein with intervening sinusoids. Hepatocytes were polyhedral in shape and contained vesicular nucleus with 1-2 nucleoli (Fig. 1).

Mean size of hepatocytes in control group was 13.2m and size of nucleus was 4.9m (Table 1; Graphs 1 and 2).

Group B

This group was exposed to aspirin only during its first week of intrauterine life. Hepatic

CONCLUSION

Aspirin causes degenerative changes in developing hepatocytes. Indiscriminate use of aspirin should therefore be discouraged during pregnancy.

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