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## **X-Rays in Pregnancy**

Patients are sometimes referred for termination of pregnancy because of exposure to diagnostic radiation in the first trimester. This step is almost universally unnecessary since there is no evidence that ionizing radiation in the doses used for most diagnostic purposes is teratogenic. Only those massive doses of radiation associated with cancer therapy or the atomic bomb have been shown to be harmful to the fetus in utero. Even the data concerning the risk of childhood leukemia arising from exposure of the fetus to radiation in utero has been called into question.

In 1985 the NH&MRC modified its "ten-day rule" on radiological examination of women, thereby acknowledging data which suggests that the first 4 weeks from the first day of the last menstrual period is not a critical period of radiosensitivity in the human species.

In fact the most significant teratogenic risk arising from ionising irradiation is that of microcephaly and mental retardation and this risk does not commence until 8 weeks of amenorrhoea. Between 8 and 15 weeks gestation the risk is linear but after 16 weeks the risk is nonlinear with a threshold of between 50 and 150 rads. Diagnostic radiology rarely involves more than 5-10 rads and the risk of malformation with doses of less than 5 rads is negligible when compared to the other risks of pregnancy.

Avoidance of irradiation in pregnancy is still desirable however, and this is widely recognised by the general public. Any woman who is inadvertently exposed is consequently very concerned and requires patient and expert counselling. It behoves the practitioner to carefully calculate the likely dose of radiation to the pelvis (usually by consultation with a radiologist) and then explain the actual risks to the patient and her partner in as realistic a manner as possible. Reference to other known but generally ignored hazards can be useful. For example, the radiation hazard from a single chest x-ray in pregnancy is substantially less than the total of ionizing irradiation which arises from natural sources over the course of a pregnancy or a single high altitude aeroplane flight of one hour's duration.

Reviewed Sep-08

