

AbstractID: 13053 Title: Online software for the evaluation of fetal doses in diagnostic radiology

PURPOSE

In this work, an online system for the evaluation of fetal doses from both medical and occupational exposures of pregnant woman in diagnostic radiology was developed. This system, called "Dose Fetal Web", also calculates the risks of in utero exposure.

METHODS AND MATERIAL

The methodology used estimates the fetal dose from data related to radiologic diagnostic examinations of a pregnant patient, or from the routine individual monitoring dosimetry of a pregnant worker. The input data of this program are associated to the conversion-coefficients tables of uterine-to-fetal dose, NUD, generated by means of Monte Carlo simulations. This system incorporates operational information of radiological equipment and hospitals facilities which are attended by a Quality Assurance (QA) program, as well as real maternal and fetal data collected during obstetric ultrasound.

RESULTS

The fetal dose from both medical and occupational exposures of the pregnant woman, as well as the risks associated with these exposures, were evaluated by means of simulated case studies using the on-line system, which can be accessed through the address <http://www.fma.if.usp.br/dosefetal>. An example using real data from radiographic examination shows a fetal dose of 4.61 mGy, and other example considering a pregnant worker in a Cath Lab show a fetal equivalent dose estimated in 0.02 mSv/month.

CONCLUSION

This work is a contribution to fetal dose and radiological risks evaluations of medical and occupational exposures of the pregnant women. It also presents some hypothetical case studies related to situations of inadvertent exposure. This kind of study is especially important if the exposure has occurred during the first weeks of pregnancy that is the period where the pregnancy can be unknown. These evaluations can benefit in the taking of decisions and the counseling the pregnant with regard to the effect of the ionizing radiation to the unborn child.