Radiation Dose measurements Survey During Hystrosalpingography in Sudan

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Introduction: **Hysterosalpingography (HSG) or uterosalpingography is the most frequently used diagnostic tool to evaluate the endometrial cavity and fallopian tube by using conventional x-ray or fluoroscopy since it emergence in 1910 .**

Objectives: **The aims of this study were to measure the patients' entrance surface doses (ESDs), effective doses and to compare practices between different hospitals. This study conducted in five radiological departments: *(A)* Omdurman Teaching Hospital (20 patients), *(B)* Alnilain Diagnostic Center, (20 patients) *(C)* Asia Specialized Hospital (10 patients), *(D)* Khartoum Teaching Hospital (12 patients) and (*E)* The National Ribat University Hospital (10 patients).**

Methods: **Patients' doses were calculated using DoseCal software. The X-ray tube outputs were measured using Unfors Xi dosimeter. Effective doses were estimated using National radiological Protection Board (NRPB) software.**

Results: **The mean ESD was 20.1 mGy, 28.9 mGy, 13.6 mGy, 58.65 mGy and 35.7 mGy for hospitals *A,B,C,D,* and *E* ,respectively.**

Table 3: Patient ESD (mGy), exposure factors and number of films per procedure

Hospital	Tube voltage (kVp)	Current time product (mAs)	No. of films	ESD (mGy)	Effective dose (mSv)
A	71.9±3.22 (66-77)	18.93±3.08 (12.6-24)	4 (1-4)	20.1±4.6 (11.8-27.4)	2.4 (1.4-3.3
B	77.9±4.72 (70-88)	24.05±2.54 (20-28)	4 (4-6)	28.9±6.3 (10.8-30.2)	3.5 (1.3-3.6)
C	75.6±4.50 (69-81)	23.4±4.62 (20-30)	4 (4-6)	13.6±4.1 (9.3-19.7)	1.6 (1.1-2.3)
D	68.8±6.05 (62-78)	158.4±53 (64-250)	2.8±0.8 (2-4)	17.5±4.6 (9.5-23.6)	2.1 (1.1-2.8)
E	68.7±3.4 (63-76)	490.9±210.6 (319-959)	5.3±2.7 (2-12)	35.7±7.8 (12.3-48.4)	4.2 (1.5-5.8)

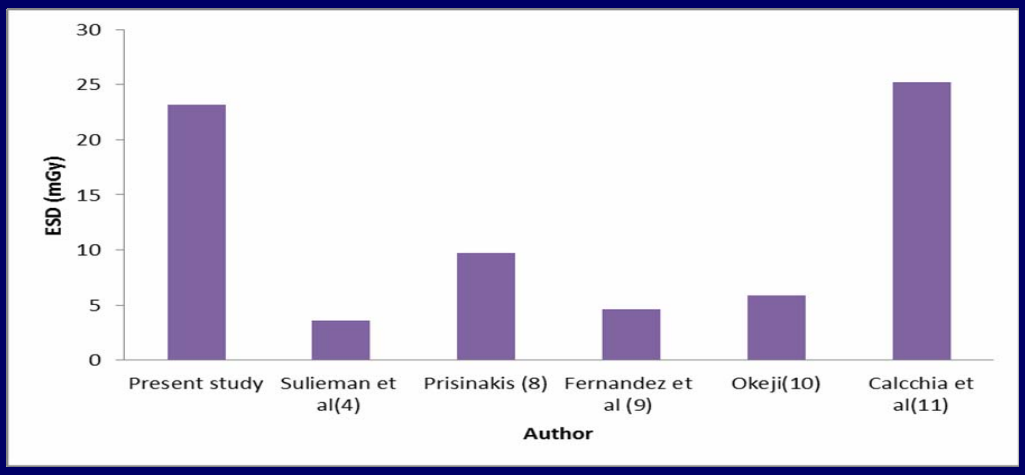

Figure 1: The mean ESD during HSG procedures in various studies

Conclusions: This study investigated the patient doses during HSG in five hospitals in Khartoum state. The mean ESD result for all patients higher than previous studies. The dose values showed wide variations attributed to the machine characteristics, technique and operator experiences. In addition, Vital organs, i.e ovaries and uterus exposed to high dose which increase the probability of cancer and heritable effects which suggest the need for dose optimisation. .

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