#4701: Benefits of a simultaneus patient and staff dose registry for interventional radiology

Authors

E. Vano, R. M. Sanchez, J. M. Fernández Soto, J. I. Ten, A. Fernandez-Ortiz; Madrid/ES

Type

Scientific Exhibit

Keywords

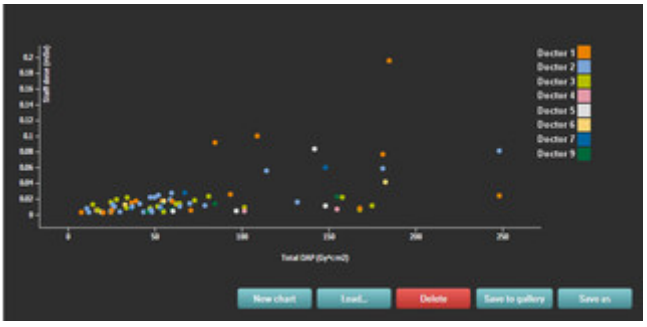
Interventional non-vascular, Interventional vascular, Radioprotection / Radiation dose, Catheter arteriography, Fluoroscopy, Dosimetry, Quality assurance

Aims and objectives

Present the experience and initial results of an automatic system, recording and processing simultaneously, patient and staff doses during interventional procedures.

Methods and materials

The system receives patient dose information (together with demographic, technical and geometrical data) from the DICOM Radiation Dose Structured Report. In addition, active electronic dosimeters (one at the C-arm and others worn by staff present at the catheterization laboratory) measure the scattered and occupational doses during the procedures transferring wireless this information to a hub receptor, and from there, via intranet, to the automatic dose processing system. The available software is able to show, at the end of the procedure, total patient and occupational dose values per procedure and for all the individual radiation events (cine and fluoroscopy runs). Trigger dose levels for individual procedures and for operators can be set.



The occupational dose (mSv) versus the patient dose (Gy·cm2) for eigth interventional cardiologists.

Results

A sample of 1200 interventional cardiology procedures have been audited in 3 catheterization laboratories. Median values of kerma area product (KAP) were 50 Gy·cm^2. Occupational doses (Hp(10) over the apron) ranged from 10 to 200 µSv per procedure. Operators with occupational doses > 1 µSv/(Gy·cm^2) were advised to improve the shielding use. For procedures with KAP >500 Gy·cm^2, clinical follow-up is considered.

Conclusion

The system allows the automatic detection of abnormal patient or staff doses to initiate corrective actions or clinical follow-up for some patients, but also to verify the correlations between staff and patient doses to alert on the improper use of protection tools as the ceiling suspended screen.

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