

SSQ21-06 The Impact of a Laser Navigation System (LNS) on CT-guided Interventions

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PURPOSE

CT-guided biopsies, drainages as well as spinal nerve infiltrations are established minimal-invasive methods. The aim of this study was to compare our results with a newly installed laser navigation system (LNS) to prior procedures.

METHOD AND MATERIALS

In June 2014 a new CT scanner (Somatom Edge, Siemens Medical Solutions, Erlangen, Germany) as well as a LNS (Amedo 3D-LNS, Amedo, Bochum, Germany) were installed in our institution. We retrospectively analysed and compared all biopsies, drainages and infiltrations from a 3 months period prior (2013) and after (2014) the installation. Lesion size, distance from skin, procedure duration, radiation dose (total CTDIvol), complications and clinical success were evaluated. Operators experience was categorized between residents under supervision and consultants, with at least 5 years of experience in interventional radiology.

RESULTS

A total of 236 procedures were included of which 69.1 % were performed by experienced operators (2013: 111 (66.7%), 2014: 125 (91.1%)). In 2014 80.5% of all interventions were performed by using the LNS. Experienced operators used the LNS in 81.3 % of all cases in 2014 vs. 72.7 % for inexperienced operators. There was no overall difference in size (12.4 cm² vs. 12.7 cm², p=0.93), duration (10.7 min vs. 10.5 min, p=0.91) or distance from skin (6.1 cm vs. 5.8 cm, p=0.37) between the two groups. Overall complication rate was 6.8 % (with LNS: 4.0 % vs. 8.9 % without LNS, p=0.14). Success rate was 97.0 % incl. 8.1 % unclear cases (96.0 % incl. 10.0% vs. 97.8 % incl. 6.7 %, p=0.46). In total the use of the LNS reduced the patients' radiation exposure by 47.9 % (30.1 mGy vs. 57.9 mGy, p<0.001). This effect was independent from experience (experienced operators: 30.4 mGy vs. 59.2 mGy, p<0.001; inexperienced operator: 26.7 mGy vs. 54.8 mGy, p=0.012). Interestingly the use of the LNS significantly reduced the procedure's duration in the inexperienced group (4.0 min vs. 13.2 min, p=0.046).

CONCLUSION

Our data suggest that the use of LNS can reduce the radiation dose significantly. This effect occurs independently from operator's experience. Furthermore there might be benefits in reducing the procedure's duration in the group of inexperienced operators.

CLINICAL RELEVANCE/APPLICATION

Dose reduction is an important factor in interventional radiology both for the patient as well as for the physician involved.