A New Software for Automated Analysis of DMSA Images

Ammar Daoud¹, Margareta Anicin¹, Matilda Landgren¹, Karl Sjöstrand², Rune Sixt³, Lars Edenbrandt¹,²
¹Department of Clinical Sciences, Malmö, Lund University, ²EXINI Diagnostics AB, Lund,
³The Queen Silvias Childrens Hopsital, Clinical Physiology, Gothenburg, Sweden

Aim
Renal imaging using Tc99m-dimercaptosuccinic acid (DMSA) is a widely used method for evaluating children with urinary tract infection. The aim of this study was to develop and evaluate a software for automated analysis of DMSA images.

Methods
• 298 patients, 1 month to 18 years of age
• 97 DMSA scans interpreted as normal were used to establish reference values for renal length in relation to age and “Normal Image” for comparison (see Figure)
• Delineation of the kidneys was evaluated by two experienced technologists
• Quantitative results were compared to those of a manual method
• Computer Assisted Diagnosis (CAD) advice was evaluated by an experienced nuclear medicine physician

Results
Delineation was successful in 90%, minor manual adjustment required in 7.5%, failure in 2.5%

CAD system detected 96% of true lesions with a positive predictive value of 35%.

Conclusion
Our new software was able to perform automated analysis of DMSA images and we will evaluate it in clinical routine.