STATE OF THE ART “GHOST DOSE” CT KUB WITH DEEP LEARNING RECONSTRUCTION HERALDS THE EXTINCTION OF PLAIN FILM

Abdul Rauf*, Saqib Javed, Stephanie Frances Smith, Joshua Hemmant, Bhargavi Chandrasekar, Margaret Lyttle, Mamoon Siraj, Rono Mukherjee, Christopher McLeavy, Hazem Alaaraj, Richard Hawkins
Leighton Hospital, Crewe, Mid-Cheshire, United Kingdom

INTRODUCTION AND OBJECTIVES

- Computed tomography Kidney-Ureter-Bladder (CT KUB), is the gold standard investigation of renal tract calculi.
- Potential health risks of ionising radiation exposure.
- Public Health England (PHE), formulated, National Diagnostic Reference Level (NDRLs) for CT KUB as 460 mGy cm or less.
- Using Canon AiCE technology, CT KUB can be performed with a radiation dose lower than that of conventional CT KUB and even X-ray KUB whilst maintaining excellent image.

MATERIALS AND METHODS

- Dose length product (DLP) of all CT KUBs performed in September 2019 (n=121) were reviewed and compared against:
  - NDRL of CT KUB
  - X-Ray – Kidney, Ureter & Bladder (Average DLP 94mGy cm = 1.4mSv)
- Two CT Scanners were used;
  - New Canon Aquilion One Genesis with AiCE
  - Standard CT Scanner

RESULTS

- Comparison of the Mean DLP and Mean Effective dose of Canon Aquilion One Genesis to current alternatives and the national recommendation

CONCLUSION

- All CT KUB’s were of diagnostic quality.
- Canon Genesis scans have lower average DLP (79mGy cm) than;
  - Conventional Plain KUB radiograph (94mGy cm)
  - UK National diagnostic reference levels of CT KUB (460mGy cm)

REFERENCES