

## Impact of artificial intelligence in chest lesions

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Since the discovery of x-rays by Wilhelm Conrad Rontgen in 1895, the utility of these new rays has extensively adopted in medicine to diagnose, prognosticate and manage many of the maladies of man. Radiograph of the chest is extensively used all over the world. In fact, statistically this is the most common investigation sent to the departments of radiology. However, the interpretation of a chest radiograph is very difficult and the misinterpretation is 1% in radiologist groups and more than 5% in nonradiologist groups. Routine radiographs of the chest are very common and constitute more than 50% of all conventional radiographs in general and multi speciality hospitals. In pre employment, pre admission, pre operative, general health check-up and in intensive care units, chest radiographs are very essential. A tele roentgenogram is the common technique which is taken at a 6 feet distance from the centre of the beam to the patient's chest, in deep inspiration and this should be a standard technique. This prevents and minimises the distortion of the mediastinum and heart size. In recent years, digital radiographs are the routine practice. With portable x-ray machines, it is not practical to take at 6 feet distance. Hence, the interpreter should know the technique adopted before properly interpreting the chest findings. The technique, positioning and the processing are important for proper interpretation. Even today, with best techniques by highly qualified radiographers and interpreted by eminent radiologists, a high false positive and false negative rates are observed. There has been no special training in interpretation of the chest radiographs and no regulation on who should interpret these. Today, the

academic radiologists as well as private practicing radiologists do not have time for interpretation of chest radiographs as they are busy with advanced technology. Hence, all and sundry have to interpret at odd situations and at odd times, which results in misinterpretations.

To address this challenge and partly to avoid mistakes, an imaging artificial intelligence (AI) algorithm can be used so that wrong interpretations are avoided. The radiologist gets full confidence with the help of AI. The Columbia Asia radiology group and the imaging AI software developer Qure [1]. AI have developed a deep learning algorithm arrived at the diagnosis by observing explanatory 'heat maps' that highlight the pathological areas. This presentation was made by Shalini Goval from Columbia Asia radiology group from Bangalore, India, at the annual conference of Radiological Society of North America (RSNA), Dec 2017 at Chicago, USA. Heat maps and ancillary tools reveal the logistics of the thinking of these algorithms which lead to proper interpretation.

Dave Pearson from radiology business expresses his view that the impact of AI will be monumental in future. These virtual consultant of consultants will be on the job 24/7/365 with no follow of in diligence because of fatigue interruptions, monotony or distractions.

Michel Recht of New York University is sanguinous and believes that AI would become a routine part of the daily lives of radiologists.

Ridley Erik L, the auntminne staff writer has reported under the title "Is seeing believing in imaging artificial intelligence". He concludes saying that in future when confidence in machine diagnosis becomes high, these algorithms can be used in quality control to detect errors or help adjudicate discrepancies in radiological interpretations.

## References

- [1] Society for Imaging Informatics in Medicine (SIIM) 2017, Annual Meeting. Bridging the transformation to a new era in Medicine. Pittasburgh, June 1- June 3, 2017. Available at [http://siim.org/page/17qure\\_ai](http://siim.org/page/17qure_ai).