Editorial

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Artificial Intelligence in Pathology and Medicine

Regarding Artificial intelligence (AI) and its development, the looming question is how far will it go and will it replace human jobs? Most of the anxiety might be originating from our subconscious tuning to the exciting yet dreaded AI-like characters of terminators movies and other Si-Fi.

Let's start with the assuring statement made by Matthew Ginsberg, creator of Dr. Fill (cross-word related AI), "…computers have natural domains of competence that are very different from ours. And it's good that we're different because it means we're not natural competitors, we're natural cooperators."[1]

As we know, in pathology and more specifically histopathology we rely on pattern reading. Image tallying and recall is one of the base for diagnosis. Having said that, computers can be taught to read patterns and fine tune them according to the feedback it gives, back and forth using neural networks and algorithms. This is the job of a microscopist, who finds out positive finding and negative areas. Even though it is postulated that human microscopist will be replaced by AI however, financial constraints are rampant and most important question is will human ability be surpassed by neural networks? Large numbers of feeding images are needed to train the computer and generate an algorithm which is not possible in near future, though it's not impossible. However, on a positive note, by reducing the demand of a microscopist, an AI might leave a pathologist focusing more on cognitive activities of higher-level requiring integration of molecular, morphological and clinical information's. [2]

Dr. Ye has been able to device a Secretary-Mimicking Artificial Intelligence (SMILE) based program which take voice feeds and generates Microsoft word outputs, which is of tremendous use to reduce time and error in data entry and retrieval, especially in places where large volumes are dealt with in a daily basis. It can assist and replace medical transcription jobs which is in high demand especially in western world.[3] In developing and underdeveloped countries like ours, AI and its possibilities in medicine is not likely to spread in recent future let along its capacity to replace humans. We can take an example of robotic surgery and digital pathology, which have come in the scene since at least a decade now. However, these sophisticated technologies which might be basic necessity (in few institutes) in Western countries is still exotic in this part of the world.

At present the ability of an AI to overshoot human cognitive capacity as a whole seems to be too farfetched. To replace humans in field of medicine means to be able to substitute the knowledge, intelligence, experience, and ability to communicate with a language as well as nonverbal skills and not to forget the emotional aspects, by another complex "being" altogether. The computing skill of a computer might not be matched with that of human, however we must not forget it is human who built the computer. AI can be an excellent supportive tool in the field of medicine to minimize human errors and reduce turnaround time in patient care, where as its possibility of interpreting a slide on its own, basis on several images it had digested or patients feeds it has received, is " no " for now. However, the pace and fate of that "now" can only be predicted not assured!!!

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1. Bennet D. Artificial intelligence? I'll say: why computers can't joke. (Accessed April 28, 2019). Available from: http://www.bloomberg.com/.news/articles/2012-03-23/artifical-intellignece-ill-say-dot-why-computers-cant-joke.

2. Granter SR, Beck AH, Papke Jr D. AlphaGo, deep learning and the future of the human microscopist. Arch Pathol Lab Med. 2017;141(5):619-21. doi: 10.5858/arpa.2016-0471-ED.

3. Ye J J. Artificial intelligence for pathologist is not near- it is here. Arch Pathol Lab Med. 2015(139);929-35. doi: 10.5858/arpa.2014-0478-OA.