AI in Predicting Patient Outcomes in Intensive Care Units (ICUs)

1. Introduction—Pre-COVID-19 Era

Artificial intelligence (AI) is considered to be the fundamental technology of the fourth industrial revolution, with global medical agencies signaling its value in constantly evolving medical care [1]. By analyzing huge databases and verifying developed algorithms, it becomes possible not only to diagnose diseases earlier and more accurately but also to implement more personalized care. The Food and Drug Administration (FDA) has approved numerous devices based on artificial intelligence technology, with the list currently including 343 entries [2]. The first product ever approved, a ventilatory effort recorder dating back to 1995 (FDA approval year 1997), was limited in design to monitor a patient's respiratory rate in addition to generating an audible or visual alarm when an average value did not fall within the operator-defined range [3]. Nowadays, these solutions are essential elements of the ventilator alerting. Over 20 years later, the FDA permitted the marketing of clinical decision-support software analyzing and notifying neurovascular specialists of a potential stroke by computed tomography (CT) imaging [4]. The images still require reassessment by the specialist at a clinical workstation; however, the in-advance notification of the operator could reduce the time to intervention as compared to the usual standard of care.

Keywords:
artificial intelligence, intensive care unit, COVID-19, machine learning

. The Application of AI in the COVID-19 Pandemic

The spread of the SARS-CoV-2 virus overcame barriers of countries and continents by utilizing the possibilities of globalization, forcing international organizations to search for new crisis-management solutions. Little was known about the new disease, and it was necessary to rapidly reduce viral transmission, identify risk factors, optimize management, and reduce the burden on hospitals that faced an influx of respiratory-compromised patients. The initial unknowns were quickly followed by emerging information chaos owing to a plethora of unverified data and their lack of systematization. It was mandatory to fill this niche promptly.

. Conclusions

Developing techniques, creating interdisciplinary teams, training medical staff in the scope of available solutions, adapting IT networks, as well as creating legal regulations should now go hand in hand in order to optimally ensure the development of AI medical personnel support

References

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