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Personalized nanomedicine

Personalized medicine simply means the prescription of specific therapeutics best suited for an individual. It is usually based on pharmacogenetic, pharmacogenomic, transcriptomic, pharmaco-proteomic and pharmacometabolomic information. Other individual variations in patients and environmental factors are also taken into consideration. Concept of personalized medicine is the best way to integrate various biotechnologies and their translation into clinical applications. Advances in nanobiotechnology will facilitate the development of personalized medicine by: (1) Nanodiagnostics will improve the sensitivity and extend the present limits of molecular diagnostics, point-of-care devices, biochips and biosensors; (2) improve discovery of biomarkers; (3) facilitate integration of diagnosis and therapy, which is an important part of personalized medicine; and (4) nanomedicines are suitable for targeted delivery to lesions. Important areas of application include Oncology, Cardiology and Neurology. In case of cancer, the variation in behavior of cancer of the same histological type from one patient to another is also taken into consideration in addition to variations among patients. Personalization of cancer therapies is based on a better understanding of the disease at the molecular level and nanotechnology will play an important role in this area. Anticancer nanomedicines can be targeted to the tumor and spare the normal tissues to reduce systemic toxicity. Personalized nanomedicines will be more effective and safer than conventional medicines. In conclusion, nanobiotechnology is playing an important role in the development of personalized medicine.

Biography

K K Jain is a Neurosurgeon with career in North America. After retirement from Neurosurgery, he started a second career in Pharmaceutical Medicine and Biotechnology in Switzerland. He is developing Personalized Medicine, since 1998, and wrote the first monograph on this topic, which evolved into a textbook and the 2nd edition, was published by Springer in 2015. His 465 publications include 27 books (5 as Editor and 22 as the Author). One of the books is, "Handbook of Nanomedicine" (3rd ed. Springer, 2017). Currently, he is a Fellow of the Faculty of Pharmaceutical Medicine of the Royal College of Physicians of UK.

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