

Important ethical issues for nanomedicine

Sir,

Nanotechnology is presently a widely used new technology. At present, it can be applied in several fields including medicine. Without regulation, unexpected and unwanted adverse events due to applied nanotechnology in nanomedicine can be expected. At first, since the nanotechnology can be applied in many medical purposes including drug and diagnostic test development, it can sometimes be a way to make profit of some unethical persons. In nanomedicine, the ethical issue is a very important issue for control of the use of the new nanotechnology by human beings. Good practice based on "unhidden agenda" of the new nanosubstance is required. The efficacy, effectiveness, and safety are important issues to be considered before implementation of any new nanotechnology in medicine. Ethical practice is required for any steps of application of nanomedicine technology. For diagnosis, the basic principle of privacy of the patient is still important. In general, data ownership and privacy and data confidentiality are the main topics to be considered when nanotechnology is applied for health purposes.^[1]

For treatment, the protection of patient's right is very important, and there must be the act against the violation of patient's right. Without complete information on effectiveness and safety of the newly used nanosubstances in medicine, it might be a violation to the informed consent principle.^[2] At the same time, the protection of the practitioner who has to come into contact with the newly used nanomaterial is also needed. As noted by Allon *et al.*, "Some interpreters agree that advances in nanotechnology may pose varied ethical challenges, whilst others argue that these challenges are not new and that nanotechnology basically echoes recurrent bioethical dilemmas."^[3] The authors hereby would like to draw the attention of the medical scientist to recognize and have a concern on the ethical issue regarding the emerging new nanotechnology in medicine [Table 1]. Internationally, collaboration and implementation of local and international law for control of the use of nanotechnology in nanomedicine is an important requirement against the possible emerging misconduct and unethical practice in medicine.^[4]

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Conflicts of interest

There are no conflicts of interest.

Table 1: Some important ethical issues on nanomedicine

Aspects	Details
Diagnosis	Conflict of interest Approval of the diagnosis tool Privacy of patient's data
Treatment	Conflict of interest Approval of the nanodrug and nanotherapy technique Informed consent Do no harm principle
Prevention	Conflict of interest Approval of the nanovaccine technique Informed consent Environmental and ecotoxicology
Researching	Patenting Misconduct in research Misconduct in publication

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