

Melanoma Treatment Approach-Nanotechnology Perspectives and Results

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Abstract

Background and Aim: Melanoma is the most serious form of skin cancer causing most of the skin cancer-related deaths. The incidence of melanoma has risen so dramatically over past few years that no other solid or blood malignancy comes close to it in terms of increased incidence. The main issue is low treatment response in conventional therapies. The aim is a low total body impact with high melanoma cells targeted treatment. *Materials and Methods:* nanotechnology has become instrumental with its far-reaching ramifications both in diagnosis and treatment of melanoma. Nanomaterials tailored as delivery vehicles can be nanocapsules, nanorods, nanotubes, nanoshells, and nanocages. All these structures protect the intended drug against degradation and enhance its stability. The development and characterization of polymeric nanoparticles, polymeric micelles, liposomes, nanohydrogel, dendrimers, inorganic nanoparticles, and hybrid nanocarriers are among the delivery vehicles that transport different anticancer agents. Functionalization of nanocarriers with specific molecules, such as antibodies, can generate different smart nanodrugs for application in cancer therapy and/or diagnosis. Nanotherapeutic strategies deal with several shortcomings that comprise of tumor characteristics, biological barriers, biocompatibility, and so on. We studied the available technologies on the European medical market which are applicable on specific cases of nodular melanoma during 2019-2021 in our Plastic Surgery unit on 18 cases of nodular melanoma stage I to IIIrd. *Results:* Development of upgraded therapeutic modalities for melanoma facilitating early diagnosis with subsequent excision before metastasis is, therefore, an urgent need. The basic results is that all patients had a proper treatment, some of them experimental one with nanotechnology and the main result is that side effects were significantly smaller in time and manifestation, the disease stopped the progress and overall satisfaction was bigger in comparison with conventional chemotherapy. *Conclusion:* Nanotechnology could be the future in targeted treatments in nodular melanoma.

Keywords: Melanoma; Treatment; Nanotechnology; Chemotherapy; Perspectives