

Mini Review**Non-melanoma Skin Cancer: Mini Review****Seyed Mohammad Amin Kormi^{1,2*}, Shima Ardehkhani³****ABSTRACT**

Non-melanoma skin cancer (NMSC) has been frequently found in Caucasians. Basically, this type of cancer is divided into two parts, i.e. (BCC and SCC). Mutation in gene PTCH1 is one of the molecular causes involved in the disease process that plays an important role in the Sonic hedgehog signaling pathway, but the factors involving in the creation of NMCS are the ones such as age, exposure to UV ray, positive family history, male gender, genetic predisposition as well as skin color (Caucasians). In the therapeutic terms, surgery is considered as the best treatment although Radiotherapy and Cryotherapy are also used to treat but surgery is the gold standard of treatment. Immune therapy is also a new method of treatment for NMCS. In this paper, we have provided the treatment methods and have suggested the best treatment method through multiple studies.

Keywords: Non-melanoma Skin Cancer, Stem Cell, Signaling Pathways, Tumor Biology

Non-melanoma skin cancer (NMSC) have been mostly found among the Caucasian people (1, 2) This type of cancer is basically divided into two parts, i.e. Basal cell carcinoma (BCC) and Squamous cell carcinoma (SCC)(3, 4). The mortality rate is usually low in this case (1). A major molecular factor involved in the disease process is the mutation

in gene PTCH1 that plays an important role in the Sonic hedgehog signaling pathway (5, 6). PTCH1 has a deterrence role for SMO and when SMO is not inhibited GLI (7), as a transcription factor, is activated (6). But, factors such as age, exposure to UV, positive family history, male gender, genetic predisposition as well as skin color (Caucasians)

Author Information

1. *Cancer Genetics Research Unit, Reza Radiation Oncology Center, Mashhad, Iran*
2. *Department of Biology, Faculty of Science, University of Zabol, Zabol, Islamic Republic of Iran*
3. *Institute of Social Security & Welfare Applied Scientific Higher Education, Branch of Tehran, University of Science - Applied, Tehran, Iran.*

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have a major role in creating NMCS (8, 9). The main factor of catching to NMCS deemed to be UV light of course when linked and immunosuppression (10, 11) but occurs during transplantation and immunosuppression, too. So, we can conclude that people infected with HIV virus are more likely to develop the disease symptoms (12, 13) By xenograftment of human primary SCC cells, the presence of cancer cells has been confirmed in stem cells or tumor initiating (14, 15). Since the stem cells exist in the epidermis for a long time, so they have the capability necessary to start the tumors due to the

genetic errors (15, 16). B-Catenin, existing in the signaling pathway, is an example of a signaling pathway that controls the fate of the stem cells as well as the phenotype NMCS (17, 18). In terms of treatment, surgery is the best treatment method (19, 20), however, we can use radiotherapy, too (21). Of course, radiotherapy plays an important role in treatment up to 90% (22). Cryotherapy is also used to treat but the gold standard method of treatment is surgery (20, 23, 24). In addition, Photodynamic Therapy (PDT) has been used in England and have had favorable effects (25, 26).

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If we are going to have a look in new NMSC treatment methods, so we can point out the immune-therapy in which, the treatment is done by inducing the production of cytokines and chemokines from dendritic cells and monocytes, whoever, it is not so common (27). On the other hand, the current molecular studies on the gene SMO will bring new hopes and possibilities in terms of the future treatments (28).

Chemicals found in cigarette smoke are considered as the very important factors in catching this kind of cancer (29) and increases the risk of cancer in SCC, significantly (30). The other chemicals including arsenic are also considered very important in developing the NMSC (31–33). Arsenic suppresses

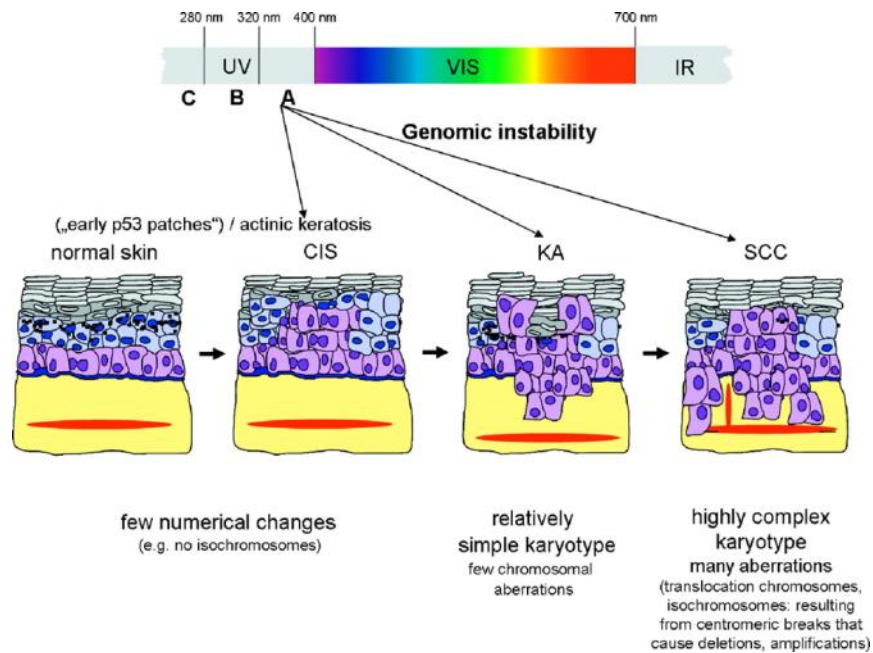
the ATP production and subsequently, the DNA healing mechanisms, having a serious dependence on the energy, become inefficient (33). The next important factor is vitamin D leading to lower incidence of NMSC (34–37). Through different methods like suppression of angiogenesis and apoptosis induction and by vitamin B3, as well, we can exemplify nicotinic-amide contributing in energizing and, as mentioned previously, the DNA repair system depends on ATP (38). Recent researches show that HPV may contribute to this type of cancer (39). There are more than 120 types of human papillomavirus that involve the skin and mucous membrane(40); in particular, the gene E6 that damages the protein P53 and subsequently, the

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gene E6 that damages the protein P53 and subsequently, the apoptosis and the DNA healing

will be faced to the problem (41) that leads to NMSC (39).



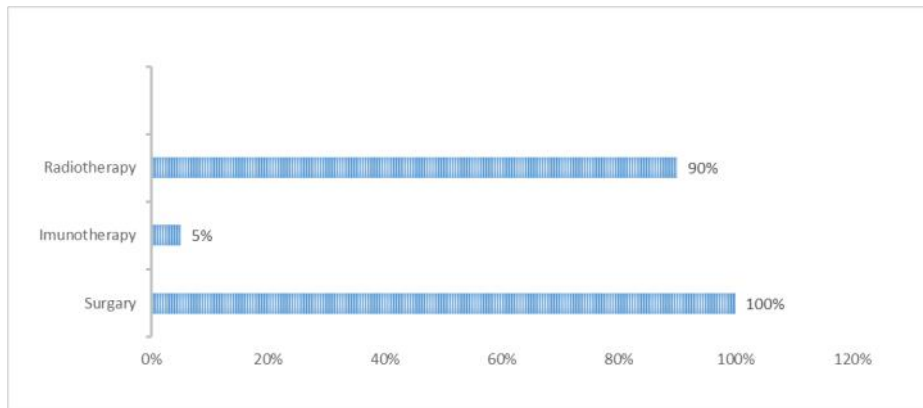
Figur1(42): The effect of UV radiation on the skin (carcinogenesis by UV radiation)

Table 1. Current treatment methods and their effects

method	Effect
Surgery	Gold Standard(13)
Radiotherapy	90%(15)
Cryotherapy	Limited (12)
PDT	Favorable (16)
Immune therapy	5%In Europe(12)

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Figur2: Comparison between three current methods of treatment

Conclusion

In terms of treatment, surgery is considered to be the best treatment method, although radiotherapy can be used, too, and of course, radiotherapy plays an important and useful role in up to 90% of the cases. Cryotherapy is also used to treat. As two of the newest NMSC treatment methods, Photodynamic Therapy (PTD) and Immune therapy can be pointed out, but the gold standard treatment is surgery.