Promising Novel Treatment against Keloids: Antivascular Endothelial Growth Factor Agents

Dear Editor,

Keloid is an irreversible, progressive hypertrophic dermal disorder characterized by continuous and histologically localized inflammation. Destructive nature of keloids leads to significant cosmetic impacts on the healthcare systems, especially on the exposed area, which implies the necessity of its proper management. It has been demonstrated that patients' quality of life has a significant negative correlation with the severity and number of keloids. There is still a significant lack of guidelines regarding the management of keloid, especially recalcitrant lesions. Among currently use strategies, very few medicines have shown to be effective in complete improvement of recalcitrant keloid lesions. Intralesional corticosteroids are the most widely accepted agents in this regard. Unfavorable side effects of these agents, especially in multiple injections with a short interval and high dose in each session, have led to many kinds of research trying to find novel strategies for keloid based on its underlying pathophysiological defects.[1,2] Currently, many clinical trials are looking at new treatments for keloid, and many of them are actively recruiting. Some of these studies are based on decreasing the collagen synthesis by the immune system and change the level of cytokines, but others reflect a broadening range of possible treatment approaches based on other theories about keloid. Previous immunohistochemical studies showed the role of some growth factors in keloids pathophysiology.[3] Among them, vascular endothelial growth factor (VEGF) has a unique role. Keloids are angiogenic lesions, and superimposed epidermis is the leading cause of keloid angiogenesis. Le *et al*. have suggested that VEGF is involved in two different pathophysiologic processes necessary for the development of keloids: first, durable inflammation or fibroplasia, and second, an imbalance in extracellular matrix metabolism.[4] The importance of VEGF in the development and exaggerated of hypertrophic scar and keloid had led to trials of medications with antivascular and antiangiogenesis properties.[5] Previous *in vitro* studies also suggested that corticosteroids can suppress the synthesis of VEGF.[6] Hence, modulation of VEGF production could comprise an appreciated treatment modality for keloids. Bevacizumab (Avastin®) and aflibercept (EYLEA®) are two examples of medicines with anti-VEGF activity. Bevacizumab, a recombinant humanized monoclonal antibody, inhibits VEGF-A. First, systemic bevacizumab was approved by the US Food and Drug Administration for some metastatic cancers, including breast, lung, brain, and renal cancers. Furthermore, it has local anti-VEGF properties.[7] Altering the VEGF activity in keloids seems to help the improvement of a vascular portion of keloid and may also prove helpful in keloid lesion. In conclusion, it can be presented as a hypothesis to utilize the local bevacizumab as a promising agent for keloid management. Future trials can be helpful to reveal its clinical effects and also its safety.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Gauglitz GG. Management of keloids and hypertrophic scars: Current and emerging options. Clin Cosmet Investig Dermatol 2013;6:103-14.
2. Viera MH, Vivas AC, Berman B. Update on keloid management: Clinical and basic science advances. Adv Wound Care (New Rochelle) 2012;1:200-6.
3. Gira AK, Brown LF, Washington CV, Cohen C, Arbiser JL. Keloids demonstrate high-level epidermal expression of vascular endothelial growth factor. J Am Acad Dermatol 2004;50:850-3.
4. Le AD, Zhang Q, Wu Y, Messadi DV, Akhondzadeh A, Nguyen AL, *et al.* Elevated vascular endothelial growth factor in keloids: Relevance to tissue fibrosis. Cells Tissues Organs 2004;176:87-94.
5. Abdel-Meguid AM, Weshahy AH, Sayed DS, Refaiy AE, Awad SM. Intralesional vs. contact cryosurgery in treatment of keloids: A clinical and immunohistochemical study. Int J Dermatol 2015;54:468-75.
6. Wu WS, Wang FS, Yang KD, Huang CC, Kuo YR. Dexamethasone induction of keloid regression through effective suppression of VEGF expression and keloid fibroblast proliferation. J Invest Dermatol 2006;126:1264-71.

7. Pourazizi M, Kabiri S, Abtahi-Naeini B. Intralesional bevacizumab (Avastin®) as a novel addition to infantile hemangioma management: A medical hypothesis. J Res Pharm Pract 2017;6:190-1.

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