

Review Article

Cancer Stem Cells and Sonic Hedgehog Signaling in Head and Neck Cancer: Potential Targets for Overcoming Chemoradiation Resistance

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Abstract.

Cancer stem cells (CSC) are a small and distinct population of cancer cells that possess self-renewal and differentiation ability and are relatively resistant to treatment including chemotherapy and radiotherapy. Sonic hedgehog (SHH) and related signaling molecules are critical to embryonic development and regulate both proliferation and differentiation of various types of stem cells, including CSC. This article provides a brief overview of the SHH signaling pathway, summarizes the correlation between SHH signaling and treatment resistance of cancer cells and discusses the recent advances in targeting this signaling cascade to overcome treatment resistance. We proposed that CSC and their related the SHH signaling pathway might be potential targets for overcoming chemoradiation resistance of head and neck cancer cells. This has been under investigation by our comprehensive team treating head and neck cancers.

Keywords : Cancer stem cell, Sonic hedgehog, Chemoradiation, Resistance

綜合評論

頭頸癌之癌症幹細胞與 Sonic Hedgehog 訊息傳導：具克服放射化學治療抵抗性潛力之標靶

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中文摘要

癌症幹細胞是具備自我更新及分化能力且對放射及化學治療較不敏感之一小群特殊癌細胞。Sonic Hedgehog (SHH)及其相關訊息傳導分子對胚胎發育非常重要，並且能調節包括癌症幹細胞等多種幹細胞之增生及分化。本文將簡介 SHH 訊息傳導路徑，扼要說明其與癌症治療抵抗性之關連，並討論如何利用標靶於 SHH 路徑以克服治療抵抗性之近期研究發展。

我們藉此提出利用標靶於 SHH 訊息傳導路徑以克服頭頸癌放射及化學治療抵抗