

Curcumin/cisplatin based radiotherapy: The new and effective method to treat cervical cancer

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Abstract

Back ground

Cervical cancer is the most common cancer in Indian females and is associated with excessive inflammation. The present treatment for cervical cancer is cisplatin based radiotherapy but it is associated with various side effects. Curcumin (Diferuloyl methane), a chemopreventive agent, is a natural compound extracted from *Curcuma longa* that allows suppression and retardation of carcinogenesis and effectively inhibits inflammation. The objective of this study was compare the existing therapy regime with a Curcumin/cisplatin based radiotherapy.

Methods

HeLa, SiHa and Ca Ski cells were cultured in DMEM and RPMI medium supplemented in 10% FBS in a humidified atmosphere of 95% air and 5% CO₂ at 37°C and were treated with 50µM curcumin/ 10µg cisplatin and 10µg cisplatin alone for 24 hrs followed by 2G radiation dose from cobalt 60 source. Cells which were not sensitized with Curcumin/Cisplatin were also treated with variable radiation doses. Apoptosis was measured by flow cytometry, Protein expression was assessed using western blotting, Telomerase expression was monitored using PCR/ELISA while caspase activity was measured using synthetic substrates.

Results

Treatment of cervical cancer cells with Curcumin/cisplatin combination dose followed by radiation resulted in increased apoptosis in comparison to cisplatin based radiotherapy.

The combination therapy resulted in increased expression of proapoptotic Bax, p73 and decreased downregulation of antiapoptotic Bcl XI, inflammatory Cox 2, Cyclin D1 and effective reduction in activity of Telomerase in comparison to cisplatin based radiotherapy. The combination therapy also resulted in increased activation of caspase -9 and -3.

Conclusion

The present study indicates that curcumin has the potential to make cervical cancer therapies more effective and safer with minimization of side effects which are associated with generation of excessive reactive oxygen species in present therapy regime. This study also indicates that in some cases curcumin can replace cisplatin as a chemotherapeutic drug.

- American Association for Cancer Research