

Nanoquinacrine induced apoptosis in cervical cancer stem cells through the inhibition of hedgehog-GLI1 cascade: Role of GLI-1

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To improve the pharmacokinetics and to study the anti-cervical cancer and anti-stem cells (CSCs) mechanism of Quinacrine (QC), a spherical nano particle of QC (i.e., NQC) was prepared and characterized. QC and NQC showed higher cytotoxicity in multiple cancer cells than the normal epithelial cells. NQC exhibited more toxicity in cervical cancer cells and its CSCs than QC. A dose dependent decreased expression of Hedgehog-GLI (HH-GLI) components were noted in NQC treated HeLa cells and its CSCs. NQC increased the expressions of negatively regulated HH-GLI components (GSK3 β , PTEN) and caused apoptosis in CSCs. Reduction of GLI1 at mRNA and promoter level were noted after NQC exposure. The expressions of HH-GLI components, GLI1 promoter activity and apoptosis were unaltered in NQC treated GLI1-knockdown cells. In silico, cell based and in vitro reconstitution assay revealed that NQC inhibit HH-GLI cascade by binding to the consensus sequence (5' GACCACCCA3') of GLI1 in GLI-DNA complex through destabilizing DNA-GLI1 complex. NQC reduced the tumors size and proliferation marker Ki-67 in an *in vivo* xenograft mice model. Thus, NQC induced apoptosis in cancers through inhibition of HH-GLI cascade by GLI1. Detail interaction of QC-DNA-GLI complex can pave path for anticancer drug design.

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Retrospective analysis of patients with carcinoma cervix in a rural/semi urban setting in Western India

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Objectives: To compare the presentation of cervical cancer and the treatment modalities received by the patients at a semi-urban/rural area of Western India with that of published literature from urban centers.

Materials & Methods: We conducted a retrospective analysis of patients with cervical cancer who presented at a semi-urban/rural cancer center between 2010 and 2013. A total of 141 patients with the median age of 51 years (25 to 81) were studied. The demographic and clinical variables included age, annual family income, profession, co-morbidities, baseline hemoglobin, prior screening, clinical stage, treatment administered and complications. The pathological variables included tumor type and grade.

Results: In our study, all patients presented with vaginal bleeding. Majority of the patients (51 patients, 37.7%) had stage 3B disease. Since majority presented at later stages (stage 3B), CTRT was the most common treatment modality used in our population. On histopathology, 127 patients (90%) had squamous cell carcinoma while 14 patients (10%) had adenocarcinoma. In 96 patients (68%), the tumor grade was not known while it was high, intermediate and low grade in 6 (4%), 18 (13%) and 21 (15%) patients, respectively. The follow up data of our study was not adequate; hence the long term survival results could not be presented.

Conclusion: Patients in rural India setting present at later stages which could be improved by creating awareness, improving their personal hygiene and adequate screening.

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