The Potential of Lithotripter Shockwaves for Gene Therapy of Tumors

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The shockwave-induced effects of cell lysis and sonoporation of surviving cells were investigated for possible application to ant-tumor therapy. Shockwaves were generated by a system similar to a Dornier HM-3 lithotripter. *In vitro* exposures of B16 melanoma cell suspensions containing a DNA reporter plasmid indicated significant transfection. Results were enhanced by leaving an air space in the exposure chambers to promote cavitation activity. In vivo, plasmids and air were injected into melanoma tumors before exposure. Significant luciferase production occurred for 200, 400, 800 and 1200 shockwaves with air injection. Results are encouraging for future development of simultaneous shockwave treatment and gene therapy of tumors.

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