Invasive versus Non-Invasive Medical Procedures :Extracellular Vesicles – Possible role in Drug Targeting in Cancer Therapy

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Abstract:

The quintessential role of physical sciences in development of medical sciences is seen in everyday life. Medical science has thus advanced to a stage that non-invasive medical procedures are taking over the invasive procedures. An area of research in this technical advancement is of Exosomal Bioloy has gone explosive during last 30 years as it has gained tremendous importance due to an increasing recognition of exosomes' pivotal role in intercellular communication and transportation as also intracellular messenger. Exosomes, of size 30-300 nm are probable nanodevices for therapeutic purposes. These are intraluminal vesicles enclosed within a single outer membrane, and are secreted by all cell types under physiological and pathological conditions and transport biomolecules, including lipids, proteins, DNAs, messenger RNAs, and microRNAs.

These tiny vesicles, miniaturized versions of cell, to say in a loose sense, appear in all biological fluids, has attracted the attention of biologists working in the broad areas of membrane biology, regenerative medicine, cancer immunotherapy, vaccinology, proteomics, nanobiotechnology and drug delivery.

Covid-19 outbreak became a serious concern as it had the potential to become a long-lasting global health crisis. With over 22 million of people infected globally resulting in over 800,000 deaths due to Covid-19 pandemic, rapid vaccine development for treatment was an urgent issue. Exosomes appear to be very attractive in this direction because of the size similarity with the virus .Treatment of metatstatic cancer, hair restoration due to hair loss and more recently, treatment of Covid-19 , are few other areas of medical science where exosomes have found tremendous therapeutic use with far fewer risks .Clearly, understanding of exosomal dynamics is going to open up and revolutionize cost-effective diagnostics, non-invasive biopsy,

development of novel therapeutic strategies and solution toward infertility treatment, neurodegenerative disease etc.