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Erythrocyte membrane disorganization: Potent and cost-effective biomarker in early diagnosis of cervical cancer**Sagarika Mukhopadhyay**
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Cervical cancer is the fifth most common cancer of the world, and poses a major public health problem. This paper explores a de novo observation that cervical cancer induced oxidative stress is responsible for erythrocyte membrane disorganization in the patients of advanced stage of clinical progression of the disease. The study of carbonyl content, antioxidant enzymes, lipid peroxidation, membrane fluidity and SDS-PAGE of erythrocyte membrane protein has been conducted on 94 adult cervical cancer patients and an equal number of age and sex matched normal subjects. Lipid peroxidation of erythrocyte membrane is observed to be enhanced and antioxidant enzyme activity alters significantly in the pathologic samples. Increased membrane fluidity is indicated by analysis of fluorescence depolarization using 1,6 diphenyl-1,3,5 hexatriene compared to healthy controls. The transition temperature of membrane lipids from gel to sol phase transition is observed to be shifted from 35°C (control subjects) to 25°C (cervical cancer patients). Degradation of the spectrin band is evidenced in SDS-PAGE of the membrane protein profile of the diseased subjects. It can be elucidated that cervical cancer induces oxidative stress in erythrocytes which finally results in increased erythrocyte membrane fluidity, altered phase transition temperature and modified protein profile. This is an original work on the importance of the protein profile of RBC membrane. These findings can be used as a characteristic signature of the red blood cell membranes and may be used for the diagnosis of cervical cancer.

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