

## The Equilibrium Paradigm-Next 16 Years Later

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**Received:** October 31, 2018; **Published:** November 26, 2018

In year 2002 a paper named "The Equilibrium Paradigm in Clinical Cosmobiology" was published. further steps in the direction of our studies of two opposite Space Weather forces -Geomagnetic (GMA) and Cosmic Ray - Neutron activity (CRA) and their effects on human health [1].

**Interrelationship:** In a number of studies it was shown that GMA and CRA are inverse correlated,  $r = -0.66$ ,  $p < 0.0001$ ; SA is also inverse related to CRA:  $r = -0.85$ ;  $p < 0.0001$ . GMA is correlated with Solar activity (SA)  $r = 0.55$ ,  $p < 0.0001$  [2].

**GMA:** GMA was intensively studied by many researcher's and also by our groups. It was shown that many risk factors for Cardiovascular Diseases like arterial blood pressure, some Immunoglobulin- Anti- Phospholipid Syndrome, blood coagulation parameters and Intermediate Coronary Syndrome cases are rising at days of high -stormy (IV<sup>0</sup>) GMA.

In the last 10 - 15 years many studies were published on the role of CRA in many cardiovascular pathologies. I will concentrate on this point: the part of days with high CRA: days with Quiet GMA, accompanied by higher CRA took place in the last decades more than 40% of all days, and high-stormy (IV<sup>0</sup>) GMA consisted (in the Middle Latitude) 1.6 - 4.5% in years 1974 - 2012. Total deaths distribution in the Middle Latitudes (n-1.050.304) was correlated with CRA and inverse related to SA. Four subtypes of Acute Myocardial Infarction (AMI) were correlated with CRA. Predictors of Sudden Cardiac Death (SCD) Ventricular extrasystoles (VPC's), Ventricular Tachycardia (VT) and Fibrillation (VF) were also correlated with CRA. Patients with implanted Defibrillators (ICD) show more discharges of the devices at days of lower GMA/higher CRA. On days of high CRA -Neutron activity the culprit artery of AMI was more often the Left Anterior Descending Artery (LAD)- the most dangerous lesion in comparison with lesions of other two Coronary vessels. Also AMI severe complications like cardiogenic shock found related to higher CRA. In the last decades the Coronary Disease (IHD)/Stroke (CVA) deaths ratio WAS related as  $r = -0.7$ ,  $p = 0.0001$ - rising CVA victims. In a 25 year study CVA monthly victims number correlate with CRA activity (132.020 deaths) study. On days with Electrical Heart Storms (3 and more episodes of VT,VF daily treated by ICD discharges) the CRA- Neutron activity was found significantly higher. At days of Stormy GMA CRA-Neutron activity was 8090 - 8095 imp/min.; at Active GMA-8049 - 8501; at Unsettled GMA 8691 - 8731; AT Quiet GMA days -9154-9168. On days of "Zero" GMA - 9492.8 imp/min [3]. The way Neutrons are acting - the presumed link to the body's H<sup>+</sup> anions and transformation to Protons attacking our cells, tissues, atherosclerotic plaques [4]. The intensity of genetic activity by changing Space Weather was also discussed. It was also shown that such congenital anomalies like Congenital Heart diseases and Down Syndrome are related to CRA activity at the month of conception. The possible interrelationship between CRA (Neutron) activity and air pollution- both cardiovascular disease risk factors was also discussed in a recent book [5].

### Conclusion

It can be confirmed that, like during extreme GMA, days of high levels of CRA-Neutron activity are related to rise in many parts of cardiovascular morbidity and mortality. The situation is supported by dominant Quiet GMA days number during the last decades, accompanied by high CRA-Neutron activity.

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**Volume 5 Issue 12 December 2018**

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