

Markers of Oxidative stress in hypertension and Pleural effusion—Towards clinical application of free radicals and antioxidants

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Free Radicals and Antioxidants has grown in leaps and bounds. This marks our sixth issue and our second year since our humble beginning. We have witnessed a growing interest both among basic researchers and clinicians in sharing their work with us. This issue features two clinical research, ten basic research articles and a timely review on the relationship between wound healing and antioxidant properties in plants. Two key articles of clinical significance that are expected to be of special interest to practicing clinicians and translational researchers are discussed below.

Distinguishing benign from malignant pleural effusion is crucial to subsequent management. Previous studies in literature have investigated several biomarkers to distinguish benign from malignant pleural effusion. These include C-reactive protein, procalcitonin^[1], epithelial membrane antigen (EMA), insulin-like growth factor-II mRNA binding protein 3 (IMP3), glucose transporter-1 (GLUT-1)^[2], desmin, Ki-67, p53^[3], IMP3/L523S^[4], hyaluronic acid, CD44^[5], deletion of CDKN2A^[6], E-cadherin^[7], B72.3, Ber-EP4, carcinoembryonic antigen, vimentin^[8], adenosine deaminase^[9] and placental alkaline phosphatase^[10]. In the present issue, Najeeb and co-investigators have examined the level of malondialdehyde, superoxide dismutase, lactate dehydrogenase and total protein in the serum and pleural fluid of 48 patients with benign and 48 with malignant pleural effusion^[11]. The results of their study show that the level of malondialdehyde and activity of superoxide dismutase and lactate dehydrogenase were significantly elevated in malignant pleural fluid compared to the level

in benign pleural fluid. Their results suggest that markers of oxidative stress are useful to distinguish between benign and malignant pleural effusion.

The role of oxidative stress in hypertension is one of the burning questions in Clinical medicine today. In one study, increased level of aldosterone level is associated with decreased nitric oxide level^[12]. Other studies have shown the relationship of serum cysteine levels to increased number of risk factors of cardiovascular disease (including hypertension, hypercholesterolemia, hyperhomocystenemia, diabetes, obesity and smoking)^[13]. The levels of 8-hydroxy-2'-deoxyguanosine (8-OHdG), 4-hydroxynonenal and malondialdehyde, markers of oxidative stress were significantly decreased following treatment of 160 women with mild to moderate hypertension with a combination of felodipine and irbesartan^[14]. Other studies have investigated the role of statins^[15], calcium channel blockers^[16], angiotensin converting enzyme inhibitors^[17] and angiotensin receptor blockers^[18] among other drugs in regulating levels of antioxidants in patients with hypertension. Zaman and colleagues in their article have investigated the level of markers of oxidative stress (superoxide dismutase, glutathione, glutathione peroxidase activity and malondialdehyde level) in 46 patients with hypertension and 48 normotensive controls^[19]. Their results suggest that the levels of antioxidants are significantly decreased and those of oxidants increased in hypertensive patients.

The Editorial Board of *Free Radicals and Antioxidants* is seeking articles with clinical application in the areas of antioxidants and free radicals. We also encourage submission of letters, book reviews, clinical and microscopic images, protocols and short communications as well. We are excited to receive innovative contributions from all over the globe and hope this will contribute to our goal of furthering our understanding of the role of free radicals and antioxidants in human health and disease.

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