

研究论文

超强静磁场联合环磷酰胺对S180荷瘤小鼠抗肿瘤和相关生理指标的影响

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摘要:

实验探讨了超强静磁场(ultra strong static magnetic field, USMF)联合环磷酰胺(cyclophosphamide, CTX)连续处理, 对S180荷瘤小鼠抗肿瘤、抗氧化、免疫及骨髓抑制等方面的影响。对S180肉瘤小鼠分组处理后, 剥取肉瘤组织称重并进行病理检验。检测过氧化氢酶、超氧化物歧化酶和谷胱甘肽过氧化物酶的活力、总抗氧化能力, 以及肝脏和肾脏中丙二醛的含量、脾脏和胸腺指数、脾脏淋巴细胞转化率、外周血中的白细胞数目和骨髓细胞的DNA含量。腹水瘤小鼠同样处理后正常饲养, 记录生存时间。结果发现, USMF+CTX组的抑瘤率(72.5%)比CTX组(51.5%)提高了40.8%, 生命延长率提高了1.5倍, 抗氧化和免疫能力也有一定程度的增强。表明USMF结合CTX, 可以协同性抑制S180荷瘤小鼠肿瘤的生长, 并减轻CTX对小鼠的副作用。

关键词: 超强静磁场 环磷酰胺 S180肿瘤

Effects on Anti-Tumor and Physiological Indexes of Mice after Ultra Strong Static Magnetic Field Exposure with Cyclophosphamide

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Abstract:

The research studied effects of ultra strong static magnetic field (USMF) with cyclophosphamide (CTX) on anticancer, antioxidation, immune function and bone marrow inhibition of S180 tumor bearing mice. After the treatment, the weight of tumor tissues isolated from S180 sarcoma tumor bearing mice, and the pathological change were evaluated and compared. The livers and kidneys S180 sarcoma tumor bearing mice were taken to measure the activities of catalase (CAT), superoxide dismutase (SOD), total antioxidant capacity (T-AOC), glutathione peroxidase (GSH-Px) and the content of maleic dialdehyde (MDA); their thymus and spleens were also obtained to measure the index and the spleen lymphocytes proliferation. The content of white blood cell (WBC) in the peripheral blood of S180 sarcoma tumor bearing mice was detected by taking the eyeballs. Their femoral bones were taken to measure the DNA content. S180 ascitic tumor bearing mice were raised normally, and the live time was recorded every day. Compared to CTX group, USMF with CTX group could inhibit the tumor growth significantly ($P < 0.05$), the inhibition rate of tumor was increased from 51.5% to 72.5%, the rate of life prolongation was decreased by 30.0%, also the antioxidation and immune function were enhanced significantly. The results suggest that USMF can enhance the curative effect of CTX in depressing the tumor growth and attenuate the negative effects of CTX.

Keywords: Ultra strong static magnetic fields Cyclophosphamide S180 tumor

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