Effect of Tanshinone IIA intrathecal injections on pain and spinal inflammation in mice with bone tumors

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ABSTRACT. The study aimed to investigate the effect of intrathecal injections of Tanshinone IIA on thermal hyperalgesia in a mouse model of bone cancer-pain. Spinal IL-1β, IL-6, TNF-α expression levels were analyzed. C3H/HeNCrIvR male mice were assigned to groups that either received dose-dependent injections of Tanshinone IIA, or the DMSO + Sham, Tanshinone IIA + Sham, DMSO + Tumor, and Control groups. Paw withdrawal thermal latency (PWTL) was measured with a radiant heat stimulus and mRNA expression levels were determined using real-time PCR. Fourteen days post-injection, PWTL in the DMSO + Tumor group was lower than that in the controls (P < 0.05). Twenty-one days post-injection, compared with the Control group, there was no significant difference in PWTL and IL-1β, IL-6, and TNF-α expression levels between the Tanshinone IIA + Sham and DMSO + Sham groups (P > 0.05). PWTL in the DMSO + Tumor group was significantly lower than the Control group (P < 0.05), while the expression levels of IL-1β, IL-6, and TNF-α were significantly higher than controls. Compared with the DMSO + Tumor group, PWTLs were higher in the Tanshinone...
IIA - 20-μg and 40-μg groups, while expression levels of IL-1β, IL-6, and TNF-α were significantly lower (P < 0.05). These measures were not significantly different between the Tanshinone IIA 10 μg and the DMSO + Tumor groups (P > 0.05). In conclusion, Tanshinone IIA may inhibit the release of inflammatory cytokines, such as, IL-1 β, IL-6 α, TNF-α.

**Key words:** Bone cancer pain; Spinal cord; Tanshinone IIA; IL-1β; IL-6; TNF-α