

Presentation Number **PT 189****ERYTHROPOIETIN (EPO) AS A NOVEL ANALGESIC FOR NEUROPATHIC PAIN****W. V. Ellis**, *Molecular Biology/ Visiting Scholar, UC Berkeley, Berkeley, CA*

Aim of Investigation: Epo has been shown to act as an analgesic in rats and as a neuroprotectant in humans. We asked if Epo has analgesic activity in human neuropathic pain and what is its possible time course.

Methods: Following informed consent, 17 patients (9 female, 8 male) suffering from chronic, stable neuropathic pain emanating from the brachial plexi (Thoracic Outlet Syndrome), and unchanged in symptomatology and treatment for over one year, recieved two perinueral injections of 1000 IU Epo directed at the upper and lower roots of the plexi. Response was monitored using a visual analog scale, interview, laboratory, and clinical examination twice per week for the first two weeks, then at one month, and subsequently at monthly intervals for 6 mos. If no side effects occurred, treatment was repeated once per mo. for two more mos.

Results: 13 of 17 (76%) experienced at least a 40% reduction of pain. Interestingly, 7 of these (54%) experienced greater than 80% reduction in their pain, lasting longer than 6 mos. In the other 6, pain relief was decidedly less and lasted less than two weeks, underscoring the existence of two distinct groups of responders. 3 patients dropped out because of hypertensive effects, one following a 6 hr. crisis. All recoverd uneventfully.

Conclusions: Epo is effective as an analgesic in neuropathic pain using remarkably small doses. Further clinical trials need to pay scrupulous attention to potential side effects. The varied, but structured, response points to two of Epo's pleiotropic effects. In the less responsive group, based on the time course of pain relief (maximal at 48 hrs., lasting 5-10 d, followed by a rapid drop), relief occurred through probable membrane/receptor effects involving Epo's role as a cytokine sequestrator and modulator (primarily of TNF- α). The more responsive group responded maximally within 5 d and showed little, if any, worsening at 6 mos., implying significant endoneural structural changes, making the previously hyperexcitable neuropathic neurons less like wound neurites and obviously more stable. As a result, we hypothesize that one significant mechanism accounting for Epo's analgesic effects is the induction of terminal differentiation in neuropathic neurons.

Keyword 1:	Erythropoietin
Keyword 2:	neropathic pain
Keyword 3:	Thoracic Outlet Syndrome
Keyword 4:	differentiation

Disclosure of author financial interest or relationships: