Antinociceptive potentiation of pethidine (demerol) by clomipramine in the late phase of formalin test in mice

Abstract:

Background Pethidine, an opioid analgesic is used for pain management. Clomipramine a tricyclic antidepressant primarily used for mood management is also used to treat pain. The objective of this study was to investigate the potentiation of the analgesic effects of sub-threshold dose of pethidine by a tricyclic antidepressant, clomipramine. Methods The antinociceptive activities of clomipramine and pethidine alone and in combination were investigated in Swiss albino mice using the formalin test. Normal saline was employed as the control. Ten animals were used in each experiment. Results Pethidine 5mg / kg failed to cause any significant effect while the 6.25, 7.5, 8.75 and 10.0mg /kg showed highly significant antinociceptive effect ($p< 0.01$) compared to the controls in the late phase of formalin test. Clomipramine 0.5 mg / kg did not show any significant effect while 0.75 mg / kg caused a significant effect ($p< 0.05$) while 1.00 and 1.25mg /kg caused a very highly significant antinociceptive effect ($p< 0.001$) in the late phase of formalin test compared to the vehicle treated animals. The combination of pethidine 5mg / kg and clomipramine 0.75mg / kg caused a highly significant antinociceptive effect ($P<0.01$) in the late phase of formalin test. Conclusion This study demonstrates a marked reduction in the time spent in pain behaviour produced by the combination of low dose pethidine and clomipramine in the late phase of formalin test. The findings demonstrate the potentiation of a narcotic analgesic by a tricyclic antidepressant.