

Does a single dose of adenosine in epidural space reduce cancer-related neuropathic pain? A randomized clinical trial

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Background: Systemic and intrathecal adenosine reduce chronic neuropathic and nociceptive pain; however, the effect of adenosine epidural injection in the treatment of neuropathic cancer-related pains remains unclear.

Objectives: The objective of this study was to evaluate the efficacy of a single epidural administration of adenosine in alleviating chronic neuropathic pain in patients with primitive neuroectodermal tumors.

Methods: In this single-blind randomized clinical trial with the unique ID of IRCT2017031428878N1, 88 patients with chronic neuropathic pain were divided into two equivalent groups. Two groups were treated with a single dose epidural administration of ropivacaine, 0.75 mL/kg from 0.2% solution (both groups), plus adenosine, 50 mcgr/kg (adenosine group), or normal saline (control group). Patients were evaluated on the days 1, 2, 3, 5, 7, 10, and 14 after injection.

Results: Both groups showed a reduction in pain severity according to verbal rating scale (VRS) (3 ± 0.09 - 1 ± 0.05 in adenosine, 4 ± 0.08 - 1 ± 0.00 in the control group) and visual analogue scale (VAS) (7 ± 0.25 - 1 ± 0.12 in adenosine, 8 ± 0.22 - 1 ± 0.06 in the control group); however, this reduction was significantly higher in the control group ($P < 0.0005$). The intensity of neuropathic pain decreased in both


groups according to Douleur Neuropathique 4 questions (DN4) scores (from 5 ± 0.23 - 1 ± 0.04 in adenosine group, and from 5.5 ± 0.24 - 1 ± 0.00 in the control group) without a significant difference between the groups ($P = 0.19$). Adenosine group had less nausea and vomiting ($P < 0.0005$). There was no significant difference in patient satisfaction levels between adenosine and control groups ($P = 0.09$).

Conclusions: Administration of bolus epidural adenosine is not effective in reducing neuropathic pain in patients with primitive neuroectodermal tumors.

Speaker Biography

Ehsan Shahverdi is a MD medical graduate (2016), who commenced his interest in Blood transfusion, cancer treatment and research in 2014. He completed a MD postgraduate qualifications before taking up positions in transfusion in Iranian Blood Transfusion Organization (IBTO) and then in cancer treatment and research in MAHAK Pediatric Cancer Treatment and Research Center. He has been a Council member of the Blood and Cancer Research Center of the MAHAK Pediatric Cancer Treatment and Research Center. He is Chairman of the department of Young Doctors and Researchers of the IPHOS. He has written over 70 scientific papers and is in demand as a speaker to a number of international congress. He has a particular interest in the transfusion services of developing countries and has travelled to many of them to lecture and assist in practical workshops. Over the years, he has been awarded life memberships of various organizations and has won several prestigious awards from medical societies. He is now very active in various community support organizations.

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