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Anaesthesiologist-associated risk factors for inadequate postoperative pain management

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Postoperative analgesia;
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Summary
Background: Issues associated with the analgesic failure are major contributors to diminished postoperative health quality. The aim of this survey was to investigate the risk factors associated with anaesthesiologists for inadequate postoperative pain management, i.e. $\geq$3 cm in a 10 cm gauge of Visual Analog Scale.
Methods: A total of 1162 confidential questionnaires were sent by mail to anaesthesiologists in clinical hospitals. Information was queried on the incidence of inadequate postoperative pain management with different length of experience in anaesthesia, reasons for such incidence and possible rescue treatments after the occurrence of the incidence, and knowledge in terms of analgesia protocols. Education background and working settings were requested as the contributing factors.
Results: In 813 returned questionnaires, 798 were completed and the data were valid for analysis (68.7% valid response rate). Approximately 43% reported encountered at least one or more incidents of inadequate postoperative analgesia. All positive answers indicated inadequate postoperative analgesia was related to types of surgery. A multiple logistic regression ($r^2 = 0.74$, $P < 0.0001$) analysis revealed that age, length of anaesthesia experience, education background and work environment are four risk factors in contributing to the incidence. Patient-controlled analgesia is the first choice for postoperative pain therapy, and opioids are preferred as the rescue drugs for inadequate postoperative analgesia.
Conclusions: Inadequate postoperative analgesia occurs widely. Age, length of anaesthesia experience, education background and the working environment of anaesthesiologists are risk factors for inadequate postoperative pain control.

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1. Introduction

Practice guidelines recommend that acute pain assessment and therapy should be integrated into the perioperative care of surgical patients [1]. This suggestion mainly derives from the recognition of the fact concerning how to assist the clinical practitioners in making decisions about health care.

Successful management of postoperative pain is associated with different factors including psychological status of patients [2,3], nursing action [4], type of surgeries [5], and regimen of analgesia [6]. These aspects have been investigated in depth and found that physiological, psychological and social cares are needed in controlling postoperative pain. However, several other factors have been contributing to inadequate analgesia such as a lack of understanding of preemptive pain management strategies, mistaken beliefs and expectations of patients, inconsistencies in pain assessing practice, and lack of analgesic regimens that account for individualized differences and requirements [7]. In addition, there have always been complaints with respect to inadequate postoperative pain control and claims due to psychic injury resulting from such issues in post-surgical patients. In China, the recent increasing rate of compensation from postoperative analgesia failure has brought the issue regarding the inadequate postoperative pain management to the fore.

We hypothesized that different people at different ages, with varying length of anaesthesia experience, and with different education background and working environment had different influence on the issue of inadequate postoperative pain management. The present survey was conducted to clarify the incidence of inadequate postoperative pain therapy in post-surgical patients by anaesthesiologists; and to characterize the rescuing strategies in cases of the inadequate analgesia; and to address the risk factors associated with anaesthesiologists for inadequate postoperative analgesia.

2. Materials and methods

The coverage of the survey was nationally wide by demarcating the mainland of China into three regions (western, central and eastern) according to administrative divisions from official website [8]. A total of thirty-one provinces and municipalities (excluding Hong Kong, Macao and Taiwan) of the three regions were involved and delivered the survey questionnaires. To obtain regional equilibrium distribution, we identified anaesthesia departments and sent the questionnaires by a population-geographic distributing ratio (i.e. population density by region) [9,10].

After approval by the Institution Ethical Examination Committee on human research, we identified the department following the criteria that a hospital is rated at least grade II or above (in China, general hospitals are classified into three grades—grade I, II and III. Grade I hospitals provide basic health care service; grade II hospitals are higher level ones than grade I and carry out regional medicare service and research; grade III hospitals, i.e. tertiary hospitals, are the highest level and are possessed of properties of medical care, education, scientific research, training, and grassroots medical assistance, etc.) [11], with an official website open to the public, and belonging to a nonprofit hospital. After the potential departments were fixed, a randomized method, in which a random number list was produced by computer, was used to select the goal department from these potential ones in each region. In each individual region, we sent the questionnaires equally to the select departments. The contents of the questionnaire envelope include three items: one introduction regarding the survey, one questionnaire form, and one including detailed information about the contact centre and information how to return the completed questionnaire by mail or fax or e-mail attachment.

With the identification of 150 anaesthesia departments whatever the status of teaching or non-teaching hospitals nationwide, the anaesthesiologists in each department were sent confidential mail containing the items of the survey questionnaires. A total of 1162 questionnaires were sent out. A follow-up mail was sent to non-respondents after 3 weeks of the deadline, and was reminded again 3 weeks later.

Questions (appendix I) centred on the frequency of the incidence in anaesthesiologists in different age groups, their knowledge in terms of analgesia protocols, as well as the length of experience for work in anaesthesia were queried. Rescuing means for inadequate postoperative pain (Visual Analog Scale, VAS $\geq$ 3.0 cm in a 0—10.0 cm gauge) were identified. In addition, education background and working environment were questioned to clarify the relationship with the incidence.

Statistical analyses were performed using GraphPad Prism version 5.0 (GraphPad Software Inc., San Diego, CA, USA). Values are expressed as the mean, standard deviation (SD), Odds Ratio (OR), 95% confidence interval (95% CI) or numbers. All categorical data were analyzed with a Chi-square test to indicate the trend.