How much does pre-procedure Sedation contribute to the Procedure associated Reduction in Pain Intensity?

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INTRODUCTION

Chronic pain is a subjective sensation and it is influenced by many physical and psychosocial factors. Because of this, the classical recommended approach to the treatment of pain is to use a multimodal treatment form. The interventional treatment approach involves the placement of therapeutic agents (usually under radiological guidance) in close proximity to the site of the pain pathology or for modulation of pain transmission. This is usually done under sedation to achieve patient relaxation prior to the intervention. Sedating agents like the benzodiazepines can decrease anxiety and also produce muscle relaxation. Considering the psychosocial nature of pain, does the sedation given prior to the procedure make any difference in the amount of pain reduction achieved by doing the procedure?

AIM

To quantify the contribution of the sedation component to the total pain reduction reported by patients following interventional pain procedures in the short term.

METHODS

Following IRB approval, we carried out a retrospective chart review of 145 patients to examine post-interventional procedure pain scores in a university hospital pain clinic setting. The primary measure was the change in the pain score following minimal sedation as a contribution to the overall reduction in pain score following the procedure. The inclusion criteria were patients who consented for interventional pain procedures in a 20 month period and had their procedure done under sedation, age range 18 – 95 years. The primary measures in the change in the pain score following sedation as a proportion of the overall pain reduction following the procedure. Following chart review and data collection, descriptive statistics was used to summarize demographic information. T-test, Anova and chi-square tests were used to evaluate for differences. A p-value of 0.05 or less was considered statistically significant.

RESULTS

The average age was 52 (SD 15.4, median 51.8). The youngest was 28 and the oldest was 85 years old. 38% were males while 70% were females. 59% were Caucasians, while 30% were African-Americans. 36% of respondents have had pain for 1 – 5 years, while 34% had it for less than 1 year and another 26% have had pain for more than 5 years. 30% of respondents were current smokers, and 16% reported current alcohol usage. Majority of patients were on multiple medications. The commonest were non-steroidal anti-inflammatory medications (NSAIDs), anticonvulsants, antidepressants and muscle relaxants. Schmerle 2 or 3 agents and tramadol closely followed. 31% of the patients had caudal epidural steroid injection, 20% had sacroiliac joint injection and 14% had facet injections. Other procedures included cervical epidural steroid injection (10%), transforaminal injections (8%), lumbar epidural steroid injections (6%). Others less frequent procedures included joint injections, sympathetic blocks, peripheric injections, radiofrequency ablations and neuroplasties.

Using the scale of 0 – 10, the mean numerical analogue pain scores when the patient arrived in the clinic (npscheckin) was 6.7 (SD 2.3, median 7.0). The pain score when patient was placed on the fluoroscopy table in the procedure room was similar to the values at check in, with a mean of 6.4 (SD 2.3, median 7.0). Patients were sedated with intravenous midazolam. The mean dose was 2.27 mg (SD 0.8, median 2.0). Pain score (npssed) after sedation (right distal injection of midazolam) dropped down to a mean of 4.9 (SD 3.2, median 5.8). At the end of the procedure, the mean pain score (npssed proc) was 2.6 (SD 2.7, median 2.1). At discharge (Aldrete’s score of at least 90% of pre-admission score), the mean pain score (npssed disch) was 1.6 (SD 2.4, median 1.0).

Using 2-t test, Anova and V2 tests, we found the following: there was no significant relationship between the midazolam dose and the pain score after sedation (p = 0.146). There was no correlation between age and pain score after sedation (p = 0.246). However, there was a significant difference in pain level between pain score at check in and pain score after sedation (t = 8.982, n = 145, p < 0.000). Pain score after the procedure was also significantly lower than the pain score at check in (t = 16.27, n = 144, p < 0.000).

CONCLUSIONS

Pain is subjective, and the relief of pain can be influenced by several factors. Intervventional pain practitioners need to be aware of their patients’ total pain and the sources of relief during such interventions. This study demonstrates that in the short term, about 31% of the absolute pain reduction associated with interventional procedures under sedation with midazolam is due to the administration of the midazolam itself. Such administration of midazolam for minimal sedation can explain about 39 to 49% of the overall pain reduction in such situations.

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