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Editorial comment

Pre-procedure anxiety aggravates pain—A problem also in adult patients

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A nervous and tense patient expecting a procedure to be painful is guaranteed to have a much more unpleasant experience than a non-anxious patient [1]. This is true for patients having surgery for nonmalignant conditions [2], but it is even more so for cancer patients having diagnostic procedures [3] or surgery [4]. This is a major problem for chronic pain patients [5]. Their nervousness in relation to acute pain escalates to despair and catastrophizing thoughts when their pain condition continues into a recurring pain: "My pain condition is so complex and difficult to treat that I will never get rid of my pain". This may become a self-fulfilling prophecy and a great obstacle to effective treatment of chronic pain [6].

In this issue of the *Scandinavian Journal of Pain* Kuivalainen and co-workers, publish their well done study on 166 adult patients undergoing bone marrow aspiration and bone marrow biopsy with focus on how pre-procedural nervousness and tension aggravate procedure-related pain [7]. They measured pre-procedural fearfulness with the State-Trait Anxiety Inventory and pain-intensity during the procedure with a numeric rating scale (NRS 0–10). They confirmed that these adult patients with or without previous experience with bone marrow aspiration or biopsy had more pain during the procedure when their pre-procedural anxiety was high compared with patients with less nervousness and tension. Some of the patients had requested oral diazepam before the procedure. If the local anaesthetic infiltration did not prevent needle stick pain, some of the patients were given intramuscular injection of the rapid onset and potent opioid alfentanil. These patients had similar pain as those without sedative or analgesic premedication. Therefore, the authors emphasize that identification of anxious patients *before* the procedure is important. These fearful patients should be given individualized anxiolytic premedication in order to reduce pain during the procedure and increase satisfaction of patients as well as caregivers [3,7].

1. Effective ways of reducing pre-procedural fearfulness and its intensification of pain

Oral premedication with diazepam 5–10 mg was not sufficient to reduce anxiety and procedural pain in the study by Kuivalainen and co-workers [1]. Clearly, this dose of diazepam is too small for an anxious adult patient. It may also have been given too late. Larger oral doses of any of the benzodiazepines will hang on too long for outpatients who want to leave the clinic soon after the procedure.

Midazolam is appropriate for out-patient clinics, it is a rapid onset, short-acting anxiolytic for intravenous administration in doses ranging from 0.5 to 3 mg.

Oral opioids for premedication are possible alternatives for anxious patients, but opioids may increase the risk of nausea and vomiting. Oral oxycodone 10–15 mg, or morphine 15–20 mg immediate release about an hour before a short-lasting procedure, or depot oxycodone (10–15 mg) or morphine (15–20 mg) given at least one hour, the morphine at least 2 h before the procedure will ensure pain relief for a few hours after the procedure as well.

Nitrous oxide (50%) in oxygen (50%) (Livopan® or Entonox®) for inhalation is now available in Nordic countries, intended for fast-onset short-acting pain relief and anxiolysis for short painful procedures. Although the equipment for delivering nitrous oxide in oxygen is simple and safe, scavenging equipment is required. In an outpatient operating room, anaesthesia equipment is normally present and nitrous oxide can easily be delivered through an anaesthesia machine with built-in scavenging.

There are other anxiolytic drugs, such as *pregabalin*. Lidén et al. [3] documented that even after bone marrow aspiration/biopsy pain persists for many days after the procedure, and there are case reports of chronic pain after bone barrow aspiration or biopsy. Pregabalin has beneficial effects on the acute pain experience and has the added benefit of reducing the risk of acute pain becoming subacute or chronic pain [8]. A fairly large dose, at least 75–150 mg orally 1 h ahead of the procedure may be needed. Such doses may cause transient dizziness, diplopia, cognitive dysfunction, and nausea but this was not the case in one recent study of 150 mg pregabalin for preoperative anxiolysis compared with placebo [10]. For prevention of chronic pain, repeated doses after the procedure are most likely needed. This hypothetical benefit is far from evidence-based.

Last, but not least: for adult patients *information* about the procedure delivered in a calm and professional atmosphere will help the nervous patients enough for them to tolerate the initial needle stick necessary for local anaesthesia. When well done, local anaesthesia infiltration and peripheral nerve blocks can make many minor procedures pain free or at least with only mild pain. However, needle-phobia is a significant problem for some adults, not only for children [9].

With an intravenous canula in place, rapid titration with midazolam and alfentanil will take care of the most nervous and tense patients, their anxiety and pain. However, the patient may easily

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loose consciousness and upper airways during i.v. administration of these potent drugs. About 30 years ago, fatalities did occur when midazolam was first used for sedation in outpatient dark endoscopy rooms without monitoring and without caregivers able to handle respiratory insufficiency. Therefore, care-givers *must* be able to monitor oxygenation and ventilation and have expertise and experience in taking care of the upper airway, even ventilate with extra oxygen when necessary.

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