Akathisia Associated with Droperidol during Epidural Anesthesia

NICHOLAS G. WARD, M.D.*

Droperidol, a butyrophenone, is frequently used as an antiemetic to prevent intraoperative and postoperative vomiting. Although usually well tolerated, it has been reported to cause acute extrapyramidal effects including dystonia. Akathisia secondary to droperidol alone has not been described, although there is one report of akathisia occurring after the combined administration of the dopamine antagonists, droperidol and metoclopramide. This discrepancy may be because dystonia is dramatic and easily observable, whereas akathisia is subtler and more subjective.

Akathisia is a sense of uncomfortable physical restlessness. It can vary in intensity from a mild subjective feeling of restlessness to an intense uncomfortable need to pace and move about. It usually can be distinguished from anxiety by the physical nature of the restlessness without necessarily the emotional experience of anxiety. A majority of patients with akathisia report restlessness in the legs (or arms). The incidence of droperidol induced akathisia is unknown but may be high. In one study when 5 mg haloperidol, another butyrophenone related to droperidol, was given orally, 40% of the patients experienced akathisia within 6 h. Of those who experienced akathisia, 25% experienced moderate, 17% severe, and 22% very severe akathisia. Akathisia can successfully be treated with medications having anticholinergic properties, such as benzotropine or diphenhydramine, with dopamine agonists, such as amantadine, or with beta adrenergic blockers, such as propranolol. The following case illustrates these principles.

**CASE REPORT**

I am a 38-yr-old man with a 0.5 cm renal calculus acutely obstructing the right ureter who was admitted for extracorporeal sonic wave lithotripsy. I was otherwise healthy but had eaten approximately 2 h prior to admission. I had also been taking Percodan 1 tablet every 4–6 h and hydroxyzine 50 mg 1–2 tablets qd. I had not taken hydroxyzine in the previous 8 h and had taken Percodan approximately 4 h prior to admission.

Preanesthetic medication consisted of 50 µg fentanyl, 5 mg diazepam, and 0.6 mg droperidol administered iv immediately prior to anesthesia. Epidural anesthesia was obtained by injecting 50 ml of 1.5% carbocaine with 1:200,000 epinephrine via the L3–4 interspace while 1 was in right lateral decubitus. Loss of pinprick sensation extended to the right T1 dermatome. A total of 1,180 ml of 5% Ringer's lactate was administered steadily over 2 h. Blood pressure initially remained stable at around 130/70 but briefly declined to 95/55. This responded well to ephedrine 5 mg iv with the blood pressure remaining in the normal range for the remainder of the procedure.

I was awake and felt comfortable at the start of the lithotripsy. Approximately 1.5 h after administration of preanesthetic medication, I developed a feeling of claustrophobia while sitting in the tank in which I had a strong desire to move my legs but could not because of the motor block. This feeling became increasingly and extremely uncomfortable as the procedure continued. In the recovery room, approximately 3.5 h after the onset of the motor block, the feeling of extreme restlessness continued. I did not feel anxious but rather relieved that the procedure was over and had gone well. The recovery room nurse asked me if I desired to walk, at which point I readily assented and began pacing in the recovery room. This pacing continued for approximately 15 min, when my wife came to see me and asked me if I felt anxious. I said, “No, I don't, but my legs have to move.” This was a phrase that my patients with akathisia frequently used. Although I am an expert in psychopharmacology and movement disorders, it was only at this point that I finally diagnosed my symptoms as akathisia. I received hydroxyzine 50 mg po and noted the cessation of the akathisia approximately 45 min later.

This experience contrasted with that 1 yr earlier when I had received epidural anesthesia for a left medial meniscectomy. Fentanyl and diazepam also were used, but droperidol had not been used. I had tolerated the procedure comfortably and had not experienced any restlessness or claustrophobic feelings.

**DISCUSSION**

Information from this case strongly supports a diagnosis of akathisia. The restless feeling was centered in the legs, not associated with an increase in anxiety and occurred 1.5 h after administration of droperidol. It had not occurred during a previous epidural anesthetic without droperidol medication. It responded to hydroxyzine (although this may have been a placebo effect) without further recurrence. The simultaneous experience of paralysis and leg restlessness may have made the akathisia particularly uncomfortable in which the claustrophobia stems from a feeling of being trapped in one's own body and not being able to move despite an intense desire to do so.

Akathisia may not be a rare event when droperidol is used as part of the medication regimen. In one double-blind study, Innovar, when compared with placebo, was reported to significantly increase tension and anxiety. This may have been akathisia. The chances of misdiagnosis or missed diagnosis for akathisia are great. It might be
seen during surgery with local anesthesia and in the recovery room after general and local anesthesia. Akathisia would generally appear as agitation, not an uncommon event in those settings and could be misdiagnosed as anxiety or, if consciousness is reduced, as confusion. Questions regarding the nature of the agitation, e.g., asking whether it is experienced as physically based or not, would be necessary to detect akathisia. More confirmatory symptoms, such as repeated leg crossing, swinging of one leg, lateral knee movements, sliding of the feet, and rapid walking would have to await the termination of anesthesia. Studies in psychiatric populations suggest that the highest risk groups for akathisia are in the 20–40 yr age group, with women being particularly at risk.12

To date, clinical studies suggest that liphophilic beta adrenergic blockers, such as propranolol (10–15 mg), are most effective for the treatment of akathisia.8,9 Anticholinergic agents have been shown to be effective but with lower efficacy than beta blockers. Finally, benzodiazepines have been reported to be effective, but it is unclear whether this stems from a general sedative effect or a specific effect on akathisia.8,9,13 Lorazepam has been reported to be less effective than propranolol.13

REFERENCES


The Penumbra Effect: Vasomotion-Dependent Pulse Oximeter Artifact due to Probe Malposition

JOSEPH F. KELLEHER, M.D., M.A.,* RON H. RUFF, M.D.†

Pulse oximetry is a widely used noninvasive method for measuring arterial hemoglobin oxygen saturation. Its principles, clinical applications, performance, and limitations have been extensively reviewed.1–3 Despite careful attempts by manufacturers to safeguard against the display of erroneous data, the value displayed by a pulse oximeter (SpO2) does not always agree with the fractional arterial hemoglobin oxygen saturation as determined by an in vitro oximeter (Sao2). Recognized causes of pulse oximeter artifact include dyshemoglobins, such as carboxyhemoglobin and methemoglobin,4–6 vital dyes, such as methylene blue,7,8 ambient light,9–11 motion,12 electrocautery,13 venous congestion,14 and nail polish.15

We present a case which suggests a further cause for pulse oximeter artifact not previously described in the literature.

CASE REPORT

A 54-yr-old, 74-kg white man was scheduled for left total knee arthroplasty (TKA). The history was otherwise unremarkable except for a 35-pack-year history of smoking. Physical examination was otherwise unremarkable.

The patient received 2 mg midazolam iv, 50 µg fentanyl iv, and breathed 100% oxygen for 3 min after which anesthesia was induced