

## Beta Blocker - Scopolamine Combination Drug Decreases Acute Anxiety in a PTSD Patient - A Case Report

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**Abstract:** Benzodiazepines are the standard-of-care for the “as needed” treatment of acute anxiety episodes. Although effective, they pose considerable risks of dependence, addiction, abuse, and death when used with opioids. A patented new class of anxiolytics has been developed that are drug combinations of a beta blocker and an antimuscarinic agent intended for the prn treatment of anxiety disorders. The PanX® drug combinations were designed as alternatives to addictive benzodiazepines, for the treatment of the sympathetic (beta blocker) and parasympathetic (antimuscarinic) symptoms of anxiety. Here we present a case report of a patient diagnosed with post-traumatic stress disorder and previous substance abuse history, who experienced symptoms of acute anxiety. The patient desired prn medical intervention without using a benzodiazepine, and was treated with an atenolol - scopolamine HBr drug combination. Self-administration resulted in rapid anxiolytic relief within 30 minutes orally or less sublingual. The patient perceived that the calming effect persisted for approximately 6 hours, and with essentially no side effects.

**Keywords:** Atenolol, scopolamine, anxiolytic, post-traumatic stress disorder

### 1. INTRODUCTION

Acute anxiety in patients with a history of dependence of benzodiazepines or opioids can be very challenging clinically. Benzodiazepines, which are the mainstay of acute anxiety treatment, have multiple risk factors. These include higher risk of death when combined with opioids (including an FDA warning in 2016), as well as slowed reaction time, cognition and memory impairment, withdrawal seizures, dependence, tolerance, and higher fall risks [1-4]. Although benzodiazepines are effective “as needed” (prn) as anxiolytics, they have numerous detrimental properties.

Other FDA-approved products for the short-term treatment of anxiety include Buspar (buspirone) or the antihistamine Vistaril/Atarax (hydroxyzine). However, neither drug is generally considered by psychiatrists to be substantially effective at treating acute anxiety episodes. There are other medications that are also used, but often they are not effective or they cause side effects. These include Neurontin (gabapentin) and the related Lyrica (pregabalin), as well as the antipsychotic Seroquel (quetiapine), although the latter is often used

effectively as a sleep aide. Overall, physicians have a very short list of effective options for the prn treatment of acute anxiety, of which benzodiazepines remain the standard-of-care.

However, here we present a case report of a patient with post-traumatic stress disorder (PTSD), who fits the above criteria of trying “everything”, and whose acute anxiety is quelled by a new approach, a PanX® drug combination of a beta blocker and an antimuscarinic agent. PanX® is a patented new class of anxiolytics intended especially for the prn treatment of the symptoms of acute anxiety [5]. Beta blockers inhibit the binding of catecholamines (e.g., epinephrine) to beta adrenergic receptors, and have been prescribed off-label for decades to suppress the cardiovascular symptoms of acute anxiety, for instance tachycardia and palpitations in performance anxiety. However, a beta blocker alone does not address the CNS and other symptoms of anxiety. Therefore, a muscarinic receptor antagonist, of which scopolamine is one of the most potent, is included in the drug combinations. Scopolamine affects the CNS symptoms of anxiousness, fear, and avoidance, plus nausea and vomiting that are components of motion sickness. The drug combos were

designed to address the sympathetic (beta blocker) and parasympathetic (antimuscarinic) symptoms of acute anxiety episodes, yet without using any addictive or Controlled Substances.

### 2. PATIENT REPORT

Patient Q is a 45 year old Caucasian male who endured chronic physical abuse throughout much of his childhood. He endorsed multiple post-traumatic stress disorder symptoms including intrusive memories, nightmares, shaking and crying episodes, along with avoidance of memories and situations that reminded him of the abuse. These experiences also negatively affected his mood and cognition resulting in depression, anger, dissociation, and a negative self-image. He also described resultant startle reflex, difficulty sleeping, and problems concentrating. He self-medicated with alcohol and amphetamine-type products during his teen year and prior to his sustained period of sobriety. Due to initiation of opioids which were medically prescribed, he did also have a period of opioid misuse. With treatment he had been in full remission from both his polysubstance dependence history, as he was sober for nine years, as well as his PTSD symptoms. Three months ago, he experienced a physical altercation while working as a supervisor. This resulted in increased anxiety and frustration, feeling on edge, shakes (tremors), and increased anger. He was stabilized on Cymbalta (duloxetine) 30 mg twice a day, which resulted in remission of symptoms along with prazosin 2 mg, which quelled the nightmares. He consumed about 1 cup of coffee per day without sequelae and smoked about a pack and a half of cigarettes per day. He denied a history of mania, psychosis, or eating disorders. There was a strong family history for addiction and depression.

Patient Q has a history of multiple anxiety medication trials. These include Vistaril (hydroxyzine) 50 mg that resulted in a groggy feeling, gabapentin 300 mg that made him feel “loopy”, and Seroquel 100 mg that resulted in good sleep, but left a groggy feeling where he “was unable to do my job”. He has tried Ativan (lorazepam) and Klonopin (clonazepam), and although he denies abusing either, he desired to continue non-addictive alternatives to his anxiety. He stated that any addictive type medications have a risk of derailing his sobriety. Therefore, a decision was made to try a commercially-available PanX® drug combo if

and when his anxiety spiked. Patient consent was obtained for a physician-sponsored study. Recently, he noted some increased family and occupational stressors and has experienced two bouts of nervousness, agitation, nausea, shortness of breath, and fear of losing control. He states his anxiety starts as a “knot in my stomach” which progresses to shortness of breath. These symptoms typically last a couple of hours, so he took the PanX® drug combo of atenolol 25 mg plus scopolamine HBr 0.2 mg (orally-disintegrating tablet compounded by Pine Pharmacy).

He took the medication twice separated by about a week, first swallowing by mouth (oral) and then sublingually (mucosal). He described full remission of his anxiety symptoms without side effects of fatigue, sleepiness, blurred vision, or confusion. “It took care of it”, he said. Patient Q did “feel it” and compared his perception of it favorably with benzodiazepines. The patient first perceived benefit within 30 minutes when swallowed and 15-20 minutes when taken sublingually, and the effects persisted for about 6 hours. He did notice that the sublingual form had a bitter taste, but denied any dry mouth. He did not experience any dizziness after the oral dose, but he did feel mildly off balance with the sublingual dose, but this cleared very quickly and did not persist. His blood pressure was 121/76 and his heart rate was 73 taken about an hour after initiation of the first (oral) dosing of the PanX® drug combo. His baseline blood pressure is in the 120/80 range and baseline heart rate in the 70-80 range based on prior medical visits per patient report.

### 3. DISCUSSION

We present a patient with PTSD, essentially in remission, who experienced a life event which brought back some of his symptoms. This was brought back under control with his therapy and an SNRI, but on occasion he does experience anxiety with upticks in routine life stressors, which can result in debilitating anxiety. In Patient Q’s case, he has tried multiple other products, which have not been effective. He has a history of benzodiazepine dependence. He values his sobriety and does not want to jeopardize this almost decade-long period of not using substances. In addition, when anxiety comes up, he attempts the many coping skills that psychotherapy has bestowed upon him. That said, at times, the anxiety becomes overwhelming, and this is where a product such

as a PanX® drug combo fits in perfectly. Patient Q's experience included physical symptoms of shortness of breath and nausea, as well as the psychic component of worrying and ruminating, all of which were stopped. Also of interest there was no awareness of overt cardiovascular symptoms, suggesting that PanX is effective for anxiety without prominent cardiovascular symptoms. Of note, Patient Q did not experience full blown PTSD symptoms, or a new onset of depression or a persistent anxiety state. However, the bout of anxiety was affecting his ability to function that morning. We believe that this type of anxiety is quite common and often is the reason that benzodiazepines are initiated, which can then lead to abuse and dependence.

The PanX® drugs were developed to provide prn alternatives to addictive benzodiazepines, without the use of any addictive active ingredients. Atenolol is a beta-1 selective antagonist of adrenalin. This particular beta blocker has been shown to affect anxiety symptoms in various circumstances, such as performance anxiety (a form of social anxiety disorder), alcohol withdrawal, and flight phobia [6-10]. Scopolamine is a high potency antiemetic muscarinic receptor antagonist. This antimuscarinic agent likely affects anxiety symptoms via the M2 and/or M1 receptors of the Central Nervous System [11]. Scopolamine has been known for over a century to produce an anxiolytic effect in psychiatric patients [12].

Beta blockers and antimuscarinic agents were selected for inclusion of PanX® drugs because they are known to be historically safety. Both classes of active ingredients have been safely used in millions of patients over five decades and neither class is addictive. Routine use of both classes of medicines in the population strongly suggests concurrent use within a vast population of patients, yet without evidence of producing side effects that extend beyond those of beta blockers alone or of antimuscarinic agents alone.

This case report documents a trial of a compounded PanX® combination drug regarding anxiolytic efficacy without side effects in a patient afflicted by PTSD. This provides some evidence that the PanX® approach is a new alternative to addictive benzodiazepines. In this patient the drug combo was fast-acting and beneficial for multiple hours and by both oral and mucosal routes of

administration. The mucosal route is expected to be more relevant when time-is-of-the-essence. The patented new PanX® drug combinations are a promising new class of anxiolytics, and in particular that can be used prn on occasions of acute anxiety. Further clinical studies of beta blocker - scopolamine combos are merited for use as a prn treatment for acute episodes and/or as a regularly dosed oral medication for anxiety disorders.

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