

# Paranoid psychosis induced by oxymetazoline nasal spray

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**Résumé :** Les cas de psychose provoquée par des médicaments adrénérgiques ne sont pas rares. Il s'agit toutefois ici d'un des rares cas signalés de psychose provoquée par un tel médicament sous forme de vaporisateur nasal. Les médecins doivent être à l'affût des dangers posés par les vaporisateurs nasaux contenant des médicaments adrénérgiques et en contrôler l'utilisation, particulièrement chez les patients atteints de psychose.

Stimulant psychosis is not rare and has characteristically been induced by amphetamines.<sup>1,2</sup> Connell's classic description of amphetamine-induced psychosis<sup>3</sup> indicates that there are no abnormalities in physical exam, there is a rapid recovery and a high relapse rate, and many subjects have abnormal personalities.

Several reports have linked orally ingested sympathomimetic drugs with psychosis.<sup>4,5</sup> Others have attributed schizophrenic-like psychotic reactions and toxic psychoses to nasal sprays ingested orally or injected intravenously.<sup>6-8</sup> However, reports of psychoses induced by the inhalation of nasal sprays are rare. Snow, Logan and Hollender<sup>8</sup> reported toxic psychosis in a 26-year-old patient addicted to phenylephrine in nasal-spray form. The patient experienced visual and tactile hallucinations, visual illusions and paranoid delusions, which subsided shortly after the therapy was discontinued.

There are two reports of psychiatric syndromes associated with the sympathomimetic agent oxymetazoline administered by nasal spray: Soderman<sup>9</sup> reported adverse reactions in the central nervous system such as convulsions, excitation, insomnia, sedation and visual hallucinations in five infants who received regular doses of the drug, and Blackwood<sup>10</sup> described a delirious state with acute paranoid symptoms in a 41-year-old woman who

abused oxymetazoline and many other agents, including menthol and camphor.

The case we describe is the first report of psychosis in an adult who used only oxymetazoline administered by nasal spray. The abuse of this drug resulted in paranoid psychosis, with clear consciousness and no delirium. Our report confirms this association because it describes the patient's repeated abuse of the drug, with the same result.

## Case report

A 41-year-old man had a history of allergies and chronic nasal stuffiness. He had consulted an ear, nose and throat specialist and for many years had used a nasal spray containing 0.05% oxymetazoline, on a pro-re-nata basis, for up to eight sprays daily. He had also received bi-weekly desensitization injections for allergies to dust and pollen. Since 1987 he had taken flurazepam, 30 mg, half strength, and oxazepam, 30 mg four times daily, for anxiety. Several months before presentation he had stopped receiving the injections for his allergies, and his nasal stuffiness increased. During the month before presentation he had increased his use of the nasal spray, to up to one 20-mL spray container daily. The container should have lasted at least 2 weeks, at the maximal recommended daily dose of up to eight sprays. He had experienced increasing anxiety, then feelings of hostility and paranoia.

On presentation the patient's thinking was dominated by the delusion that his death, by execution or suicide ordered by "thought readers" (devices implanted in his inner ear that could read his thoughts and control his actions), was imminent. He was extremely fearful, suspicious and guarded. He was fully oriented, cognitively clear and not hallucinating. Physical examination and blood analysis, including thyroid and routine biochemical tests, gave normal results.

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For 10 years the patient had been treated as a psychiatric outpatient for anxiety, obsessive-compulsive traits and a schizoid personality disorder. In the mid-1980s he had briefly developed concerns that he was being harassed by the sisters of a dead girlfriend, but he was not thought to be psychotic, and his symptoms remitted spontaneously.

During the hospital stay it became clear that the patient was addicted to the nasal spray. He stated that he "would sooner die than to have to stop using it." He said that the spray made him "feel good." Despite being informed that the drug was likely causing him serious harm and the persistence of his nasal congestion he continued to use large amounts for several weeks, sometimes from dispensers surreptitiously given to him by family members. Several times hospital staff saw him with spray dripping down his upper lip.

At the beginning of the patient's stay he refused to take antipsychotic medication. His paranoid symptoms persisted. After 3 weeks he agreed to substitute his usual nasal spray with one containing 0.025% of the corticosteroid flunisolide, but no sympathomimetic drug, and small doses of perphenazine, 8 mg twice daily. Within days his psychotic symptoms began to diminish markedly, and 2 weeks later there was no mention of the thought readers. He was discharged after another week.

Immediately after discharge the patient stopped the neuroleptic therapy and resumed the use of the oxymetazoline nasal spray. His paranoia returned. He required another brief (8-day) stay in hospital 2 weeks later. The previous therapy was reinstated, and there was rapid improvement. After discharge the patient took small doses of perphenazine for 6 months. Sixteen months later he was free of psychotic symptoms. He still uses a steroid nasal spray but has abstained from the use of oxymetazoline.

## Comments

This is a classic case of stimulant psychosis with a unique cause. The patient had an underlying schizoid personality, obsessive-compulsive traits and a past episode of mild and transient paranoia. His persistent concern with nasal symptoms was fueled by his obsessive character, which led to his abuse of the oxymetazoline nasal spray. He became addicted to the drug, and eventually psychotic symptoms emerged. When the patient resumed the use of oxymetazoline after his symptoms had remitted, the psychosis recurred.

Oxymetazoline is a lipophilic sympathomimetic drug. Like amphetamine, it is a strong noradrenergic stimulant of the central nervous system. It is well absorbed systemically and crosses the blood-brain barrier easily. Excessive use leads to reactive vasodilation and congestion. Congested mucosa presents a rich vascular surface for the enhanced absorption of the agent.

Amphetamines release biogenic amines such as

dopamine and norepinephrine from terminal storage sites in nerves.<sup>11,12</sup> Psychosis is thought to result from the release of serotonin and dopamine in the limbic system induced by high doses of amphetamine.<sup>11-14</sup> Orally administered sympathetic agents such as salbutamol, ephedrine and phenylpropanolamine, as well as being addictive, have caused a wide range of psychiatric symptoms, including psychosis and mania.<sup>15-19</sup> The case we have described provides evidence of similar dangers with the use of nasally absorbed oxymetazoline.

Physicians must be vigilant to the dangers of nasal sprays containing oxymetazoline. They should enquire about the overuse of nasal sprays in patients with psychosis. They must monitor patients' use of nasal sprays containing oxymetazoline and advise those with chronic nasal congestion that the overuse of this drug may be dangerous. Finally, physicians should be aware of the dangers of all commonly used products that contain sympathomimetic drugs.

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