Allergic contact dermatitis caused by apomorphine hydrochloride in a carer

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Introduction

Motor fluctuations and dyskinesia are common in advanced Parkinson’s disease and are only poorly managed by oral medications. Apomorphine hydrochloride is a dopamine agonist that is currently used for the management of refractory levodopa-induced ‘off’ states (1, 2). It is usually administered subcutaneously, either by intermittent injections or by continuous

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infusion with a small, portable pump. Continuous infusion is prescribed when symptoms require greater control, and permits the reduction of dyskinesias by nearly 50% (3). This system needs daily preparation of the infusion pump, which is usually set up by the patient’s carer.

Case Report
A 57-year-old non-atopic woman presented with a 1-year history of pruritic lesions. Cutaneous examination showed well-demarcated eczematous plaques affecting several locations in her face (Fig. 1) and right hand. A detailed history showed that she was the carer for her husband, who had Parkinson’s disease. Every day, she prepared a subcutaneous infusion pump, which administered a 50% aqueous solution of Apo-Go® (50 mg of apomorphine hydrochloride and sodium metabisulfite; Genus Pharmaceuticals, Newbury, UK). During the process, her hands were moistened with this drug on multiple occasions (Fig. 2). The lesions occurred in areas of the hands in direct contact with the drug and also through presumed transfer of the drug to the face (ectopic dermatitis). Moreover, she had also previously experienced one episode of nail lesions and paronychia following the use of a nail varnish (Hollywood Yolizul Fashion®; Darlos S.L. International Cosmetics, Esplugues de Llobregat, Spain).

Patch tests were performed according to the International Contact Dermatitis Research group criteria, with the TRUE Test® system and Chemotechnique® allergens/Finn Chamber® applied on the back and fixed with Micropore®. We tested to the Spanish baseline series (Grupo Español de Dermatología y Alergia de Contacto), cosmetic series and Apo-go ‘as is’, along with sodium metabisulfite (1% petrolatum). Positive reactions were noted on day 4 to epoxy resin (+++) and to the drug, so we decided to repeat testing with serial dilutions of apomorphine hydrochloride in water and pet. The apomorphine-related patch test results are recorded in Table 1. Patch tests with Apo-go ‘as is’ and with apomorphine hydrochloride 10% pet. gave negative results in 20 healthy volunteers.

After the patient had been advised to avoid contact with the drug by the use of gloves during the preparation of the infusion pump, the dermatitis gradually resolved. The nail varnish to which she had previously reacted did contain epoxy resin, explaining the relevance of this positive test.

Discussion
Apomorphine hydrochloride (CAS #41372-20-7) is a benzylisoquinoline alkaloid obtained as the result of morphine decomposition. It is a short-acting D1-receptor and D2-receptor agonist, because of its structural similarity to dopamine (4). Historically, this drug has been used to treat several medical conditions, including insomnia, alcohol dependence, and schizophrenia; at present, it is mainly used to treat advanced Parkinson’s disease and erectile dysfunction (3, 5). Apomorphine hydrochloride may be administered subcutaneously, nasally, rectally or sublingually; however, it cannot be given orally, because of its high first-pass metabolism (6). It is susceptible to air-induced and light-induced decomposition, so an antioxidant, such as sodium metabisulfite, is routinely added to commercialized preparations (7).

Table 1. Apomorphine related patch test results

<table>
<thead>
<tr>
<th>D2</th>
<th>D4</th>
</tr>
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<tbody>
<tr>
<td>Apo-go (Genus Pharmaceuticals) ‘as is’</td>
<td>++</td>
</tr>
<tr>
<td>Apo-go 50% aqua</td>
<td>—</td>
</tr>
<tr>
<td>Apomorphine hydrochloride 10% pet.</td>
<td>+++</td>
</tr>
<tr>
<td>Apomorphine hydrochloride 5% pet.</td>
<td>++</td>
</tr>
<tr>
<td>Apomorphine hydrochloride 1% pet.</td>
<td>+?</td>
</tr>
<tr>
<td>Apomorphine hydrochloride 5% aqua</td>
<td>+</td>
</tr>
<tr>
<td>Apomorphine hydrochloride 1% aqua</td>
<td>+</td>
</tr>
</tbody>
</table>

+?, Doubtful reaction. Erythema without infiltration.

Fig. 1. Well-demarcated ectopic eczematous plaques affecting several locations on the face.
hand-fill gelatine capsules with apomorphine powder (8). Since then, only one other case has been reported: a man with eczematous lesions on his hands and perioral area, following the preparation of vials containing this drug and injection of them into his wife (9). These three patients had been patch tested with aqueous solutions of apomorphine hydrochloride, which is recommended to be tested either as 0.01% aqueous or 1% aqueous dilutions (10). According to our patch test results, pet. also seems to be an adequate test vehicle. Moreover, because, in our patient, the 1% pet. dilution was only doubtful at the first reading, we recommend not using a dilution lower than 1%, in order to avoid false-negative results. Furthermore, if it is not possible to obtain apomorphine hydrochloride, patch testing with the commercial preparation ‘as is’ and also with the vehicle components
such as sodium metabisulfite may be a good initial diagnostic approach.

Conclusion
We report a case of allergic contact dermatitis caused by apomorphine hydrochloride in a carer who prepared and used a subcutaneous infusion pump to administer an aqueous solution of this drug. We believe that, with increased use of this treatment, new cases are to be expected in the future.

References

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