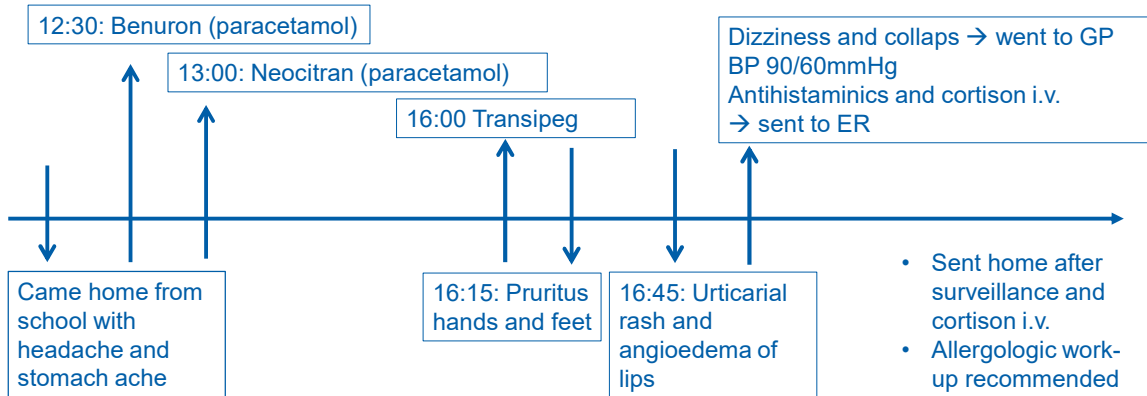


Case vignette: 10-year-old girl

Year 2010



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Conclusion

Diagnosis

1) Allergic reaction grade IV after Transipeg (macrogol) and Neocitran Intake

- Type-1 sensibilization to macrogol
- Paracetamol tolerated without problems

2) Type-1 sensibilization to Naproxen with unclear clinical relevance

Recommendation:

- **Macrogol-containing preparations (PEG, polyethylene glycol) as well as phenylephrine and pheniramine (Neocitran ingredients) should be avoided**
- The group of propionic acid derivatives should be avoided. A provocation test with Celebrex was declined

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Polyethylene glycol (PEG), the “hidden” allergen

- Also called **macrogol**
- Hydrophilic polymers used to improved solubility and stability of products
- Where is it found?
 - **Active medical ingredients of laxatives** (e.g. Movicol, colonoscopy preparation)
 - **Pharmaceutical excipient** (e.g. tablet coatings, depot steroids, mRNA COVID-19 vaccines)
 - Medical products (e.g. wound dressings, ultrasound gel)
 - Household products (e.g. detergents)
 - **Cosmetics** (e.g. shampoos, toothpastes, sunscreens)
- **PEGs are classified by their average molecular weight** (e.g. PEG 400, PEG 3350)
 - Low MW (<400): clear viscous liquid
 - High MW (>1000): opaque solids and powders.

! Allergic potential increases with higher molecular weight !

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Diagnostic Algorithm

Polyethylene Glycol–Induced Systemic Allergic Reactions (Anaphylaxis)

Priya Sellaturay, MRCP, Shuaib Nasser, FRCP, and Pamela Ewan, FRCP Cambridge, United Kingdom

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TABLE II. SPT protocol for PEGs

PEG MW	Step 1	Step 2	Step 3
400	0.5%		
3350	0.1%	1%	10%
4000	0.1%	1%	10%
8000	0.1%	1%	10%
20000	0.1%	1%	10%

PEG obtained from Sigma-Aldrich (diluent phenol saline). Each step carried out sequentially with intervals of at least 30 min.

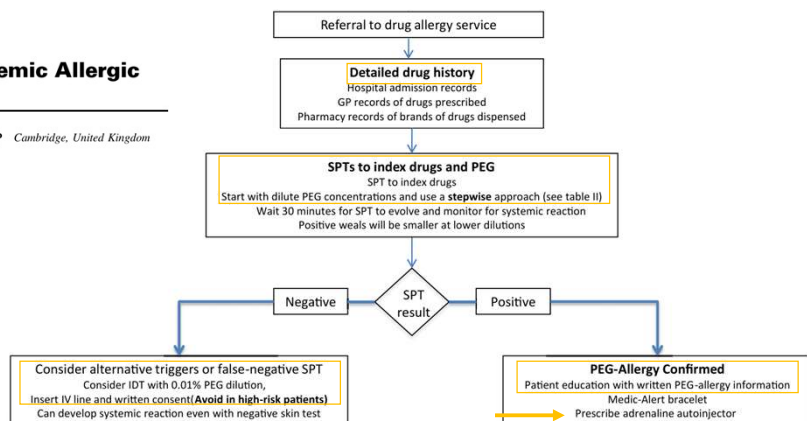


FIGURE 1. Algorithm for the investigation of suspected PEG SARs. *Twenty-four-hour sample can be done by allergy clinic.

Graded drug provocation test (DPT) may be considered if skin tests are inconclusive

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! Avoid use of PEG-containing emergency medications !

Zusammensetzung ^

Cetirizin dihydrochlorid (10 mg)
 corresp.: Cetirizin (w)
 Lactose-1-Wasser (64.08 mg) (H)
 Cellulose, mikrokristalline (H)
 Croscarmellose natrium (H)
 Magnesium stearat (H)
 Siliciumdioxid, hochdisperses (H)
 Überzug:
 Hypromellose (H)
 Macrogol 400 (H)
 Titandioxid (E171) (H)
 corresp.: Natrium (0.21 mg) (H)
 pro compr. obduct.



Zusammensetzung ^

Levocetirizin dihydrochlorid (5 mg)
 corresp.: Levocetirizin (w)
 Cellulose, mikrokristalline (H)
 Lactose-1-Wasser (63.5 mg) (H)
 Siliciumdioxid, hochdisperses (H)
 Magnesium stearat (H)
 Hypromellose (H)
 Titandioxid (E171) (C)
 Macrogol 400 (H)
 Excip. pro compr. obduct.



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Take-home messages

- Rare but real:** underdiagnosed, suspect PEG if a patient has "idiopathic" reactions to unrelated drugs.
- A hidden allergen:** ubiquitous in pharmaceuticals, medical products and cosmetics.
- Molecular weight matters:** Reactions are often **dose and weight-dependent**. Patients may tolerate low MW (cosmetics) but react to high MW (laxatives/steroids).
- High-risk testing:** skin testing carries a **significant risk of triggering systemic anaphylaxis**, must be done in a controlled setting.

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