Polyethylene glycol hypersensitivity, patient outcomes in a seven year retrospective study.

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April 05, 2024

Abstract

Background: Immediate IgE-mediated hypersensitivity reactions to polyethylene glycol (PEG) are rare. Our understanding of PEG hypersensitivity reactions is limited. We evaluate the clinical characteristics and investigation outcomes of the largest cohort of PEG allergic patients reported so far. Method: 44 patients investigated for suspected PEG allergy across four UK tertiary allergy centres between October 2013 and December 2020 were studied. Clinical characteristics, details of index reaction, and approaches to and outcomes of allergy investigations were analysed. Results: PEG hypersensitivity was confirmed in 42 of 44 cases. Macrogol laxatives were the most common index drugs reported (23%), followed by depo-medroxyprogesterone (19%), oral penicillin V (10%), and depo-methylprednisolone (10%). 61% experienced grade III anaphylaxis. Intradermal testing (IDT) increased the diagnostic sensitivity from 51% to 85%. Five patients experienced systemic reactions during IDT. Of the five patients, two were skin prick test (SPT)-positive to a high molecular weight (MW) PEG. Seven PEG-allergic patients reported tolerance to H1 antihistamines containing PEG. Administration of mRNA COVID-19 (n=5) or AZ COVID-19 vaccines (n=14) was tolerated in 16 patients. Conclusion: PEG hypersensitivity is an uncommon cause of drug-induced anaphylaxis. Four index drugs accounted for two-thirds of cases and reactions to these drugs should prompt PEG hypersensitivity investigations. PEG IDT increases diagnostic yield. The role of SPT with higher MW PEGs requires further attention. We observed no correlation in PEG dose and concentration between the implicated and tolerated PEG-containing drugs. Further studies are required to understand PEG thresholds and PEG equivalent doses of various administration routes. COVID-19 vaccines were tolerated by all exposed.

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Table 1 Demographics and Index reaction.docx available at https://authorea.com/users/752921/articles/723431-polyethylene-glycol-hypersensitivity-patient-outcomes-in-a-seven-year-retrospective-study

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Table 2 Index drugs reported for each patient.docx available at https://authorea.com/users/752921/articles/723431-polyethylene-glycol-hypersensitivity-patient-outcomes-in-a-seven-year-retrospective-study

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Table 3 DPT-positive patient details.docx available at https://authorea.com/users/752921/articles/723431-polyethylene-glycol-hypersensitivity-patient-outcomes-in-a-seven-year-retrospective-study

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Table 4 Comparison of PEG MW and quantities between index drugs and PEG drugs tolerated.docx available at https://authorea.com/users/752921/articles/723431-polyethylene-glycol-hypersensitivity-patient-outcomes-in-a-seven-year-retrospective-study