Research and Reviews: Drug Delivery

Novel Data in Interactions of Subcutaneous Immunoglobulin and its Adverse Drug Reactions

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Commentary

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ABOUT THE STUDY

Immunoglobulins (also known as antibodies) are used to treat adults and children with primary immunological deficiencies (as well as other medical disorders) who are unable to produce enough antibodies on their own or have antibodies that aren't working properly. Immunoglobulins administered subcutaneously may have numerous advantages. The trough IgG concentrations achieved are more stable and physiological than those obtained with intravenous immunoglobulin. Subcutaneous treatment is also related with less systemic adverse responses than intravenous injection, and it assists patients with inadequate venous access. Furthermore, the excessive IgG peaks associated with cardiac and thromboembolic adverse events after intravenous immunoglobulin infusion do not occur with subcutaneous treatment.

Mild local injection reactions, such as Erythema, Edema, Swelling, Pruritus, and Local heat, are the most commonly reported adverse effects, and their frequency diminishes over time. The cumulative incidence of 0.25 events per infusion after therapy with intravenous immunoglobulin is similar to the rate of non-infusion-site responses after subcutaneous injection (0.24 events per infusion). Headache, Diarrhoea, Tiredness, and Nausea are examples of non-infusion-site side effects following subcutaneous injection.

Observational research Local responses occurred in all 49 patients with initial immunodeficiencies after receiving a 20% subcutaneous immunoglobulin product, with a rate of 0.6 occurrences per infusion. The local reactions were tolerated by the patients, and they improved over time. There were 98 drug-related reactions in 2264 infusions, with a drug-related adverse event rate of 0.043 per infusion. Most of the reactions were minor. Seven of the drug-related side effects were severe. Due of adverse effects, two patients withdrew. Headache was the most prevalent systemic adverse event, occurring in 12 of 49 individuals; vomiting, discomfort, and exhaustion each occurred in three patients. Two patients each suffered contusions, back pain, diarrhoea, upper abdominal discomfort, nausea, migraine, rashes, and arthralgia.

Three patients in a trial who transitioned from intravenous to subcutaneous immunoglobulins discontinued subcutaneous delivery due to fever, myalgia, and arthralgia in the days after the infusion and returned to intravenous immunoglobulin. There have been no reports of lipodystrophy or other chronic skin abnormalities after over 25 years of chronic treatment with subcutaneous delivery. Factors of susceptibility Because of inadequate venous access and often rich subcutaneous tissues, young children can be efficiently treated with subcutaneous immunoglobulins. Subcutaneous immunoglobulin treatment was tolerated well by three young children.

In the method of drug administration the limited volume that may be injected at one spot due to the resistance of the submucosa's collagen and hyaluronan architecture is a possible downside of subcutaneous IgG delivery. Pre-administration of recombinant human hyaluronidase 150 U/g allows for more subcutaneous immunoglobulins to be administered. Within 24-48 hours, the hyaluronan structure is rebuilt. All treatments, with or without hyaluronidase, resulted in erythema. Large swellings resulted during infusion rates of more than 100 ml/hour, which disappeared the next day. The number of infusions, needles, and locations each month can be greatly decreased when hyaluronidase is pre-administered.

Dosage schedule for drugs Rapid push administration of 3-20 ml was linked to a similar rate of adverse responses as pump infusion over 2 hours, with mild transitory local reactions being the most common.