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Intravenous Therapy; Boon or Curse?

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Abstract: Intravenous (IV) medications are common among hospitalized patients. Medication, fluids, nutrition, and blood products can all be given via the intravenous route. It is the first choice for patients requiring sudden therapeutic effect, those with life threatening disease, unconscious patients, patients with vomiting etc. Depending on the medicine and therapeutic effect needed expert health professional decides the effective way of administration like bolus injection, continuous infusion, and intermittent infusion. Bolus injection provides a quick response. Some drugs which are typically given by IV route include immunoglobulin medications, medicines for pain management such as hydromorphone and morphine, antifungal drugs like micafungin and amphotericin, Antibiotic drugs like vancomycin, meropenem and gentamycin etc. Even though IV route provides 100% bioavailability it also possesses some side effects and complications. Sometimes it can lead to serious infections, phlebitis, air embolism, blood clots, hypersensitivity reactions etc. But these side effects can be minimized by careful intravenous administration.
Keywords: Intravenous (IV), drug administration

INTRODUCTION

In modern medical practice, up to 80% of hospitalized patients are on intravenous (IV) therapy at some point during their admission. It is often used because of its good bioavailability. Medication, fluids, nutrition, and blood products can all be given via the intravenous route [1] although common; these practices are not devoid of complications, which may lead to mortality and morbidity, increased duration of hospital stay, and significant costs.

ADMINISTRATION OF DRUGS BY THE INTRAVENOUS ROUTE

Generally drugs are administered intravenously under certain circumstances .If possible patient can be treated with oral dugs to increase ease of drug administration and also patient discomfort and irritation can be reduced

- Patients with serious or life threatening diseases can be given intravenous drugs to get the therapeutic effectiveness as early as possible. This practice is welcomed because a sudden therapeutic intervention is needed in critically ill patients which can be obtained through IV route[2]
- Some drugs may be available only as intravenous drugs and can't be used by other routes. For example, aminoglycoside antibiotic won't be absorbed via gastro-intestinal tract, so that it can be administered via IV route
- Patients who are unable to take medicines orally, like those with vomiting are given intravenous medicines
- Unconscious patients should not be given oral medicines as they can't swallow ,instead they are given intravenous medications

ROUTE

For effective drug administration route of consumption of medicine is important. IV route is one of the best routes which ensure 100% bioavailability. Peripheral IV therapy is categorized into bolus injection, intermittent infusion and continuous infusion. Route of administration is selected based on medicine and its therapeutic effect [3]. Bolus injection is used when quick response and high blood concentration are needed. It is also recommended when patient is fluid overloaded and if medicine is not chemically stable in a solution [4]. Intermittent infusion reduces risk of adverse reactions, for example, bolus antibiotics. Medicines not chemically stable for continuous route, for example, benzyl penicillin are given as intermittent infusion. Continuous infusion is used when constant effect and blood level are required.

DRUGS TYPICALLY GIVEN BY INTRAVENOUS ROUTE

Drugs that are commonly administered by intravenous route include:

- Dopamine, epinephrine, nor-epinephrine, dobutamine etc. which are used for low blood pressure
- Immunoglobulin medications (IVIG)
- Medicines for pain management such as hydromorphone and morphine

- Antifungal drugs like micafungin and amphotericin
- Antibiotic drugs like vancomycin, meropenem and gentamycin
- Drugs used for chemotherapy like doxorubicin, vincristine, cisplatin etc[5]

SIDE EFFECTS

Every drug has corresponding side effects. Although intravenous drugs are found to be more effective, it also possesses some side effects. As their action is fast, occurrence of side effects are also faster.

Infection

Use of sterile equipments for IV therapy reduces chances of infection which can occur at the injection site. If the infection spreads to the blood stream it can be dangerous. Fever, chills, redness, pain, and swelling at the injection site are all symptoms of infection [6].

Air embolism

If air get trapped in the IV line, it can be dangerous. If air gets inside the syringe, it can travel over the blood vessels to heart and can even cause heart attack and stroke. This problem can be overcome by careful drug administration by experts.

Blood clots

Blood clots can be formed as a result of IV drug administration. Clots can block important blood vessels and damage the tissues. Deep vein thrombosis is one such disease which can occur as a result of IV treatment [7].

Hypersensitivity

This is one of the most serious consequences of IV therapy. The patient may be allergic to the cannula, skin antiseptic preservatives, or any other components of IV therapy. Reaction can vary from a rash, itching, and hives to bronchial spasm and anaphylaxis

CONCLUSION

Intravenous medications are often prescribed for inpatients due to their high bioavailability. It is a better choice of treatment as it produces quick response and fast therapeutic effect [8]. Even though IV route provides 100% bioavailability it also possesses some side effects and complications. Also it produces discomfort and irritation to some patients. It lengthens hospital stay and also increases hospital costs. Sometimes it can lead to serious infections, phlebitis, air embolism, blood clots etc. It will be better if it gets switched to oral formulation with same bioavailability

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