Readers' Forum

Adverse Drug Reaction to Cefipime

Recently, I came across two patients aged six years who were receiveing injection, Cefipime intravenously. On 5th day of its administration, both patients suddenly collapsed after receiving a bolus dose of injection Cefipime. They developed cyanosis and peripheral pulses were not palpable. Blood pressure was not recordable. There was laryngeal spasm and shallow gasping respiration. Patients were revived with oxygen, adrenaline, hydrocortisone and normal saline administration.

1. Did this reaction occur due to rapidly pushing the drug, rather than giving slow IV infusion?
2. Can a similar reaction occur following an intramuscular injection of Cefipime?
3. Is a skin testing required prior to administer.

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Reply

Though anaphylaxis to cefepime is not common, there is a well documented report of IgE-mediated hypersensitivity to cefepime in a 10-year-old child(1).

Three types of sensitisation are postulated in patients reacting to cephalosporins with immediate type hypersensitivity: One possi-bility is preexisting IgE directed against the betalactam portion of the molecule (2); another possibility is preexisting IgE directed against the specific cephalosporin that produced the reaction (*e.g.*, recognition of the entire molecule)(3-5) and a third possibility is allergic cross-reactivity among different cephalosporins either by recognition of the core ring structure or by recognition of the side chain structures(6-8). It is not related to the rate of pushing the drug IV.

Cross reactivity may exist between cefepime, ceftriaxone, cefotaxime and ceftazidime as thay all have the same acetyl side chains (2-amino-4-thiazolyl). Therefore, prior exposure to one of the other fore- mentioned cephalosporins might sensitise a patient to cefepime.

I must take this opportunity to inform you that though cefepime may be used for empirical broad-spectrum antibiotic treatment for febrile neutropenia, carbapenems are a more reliable choice(9). Further, there are reports that increased ciprofloxacin-resistant *K. pneumoniae* and meropenem-resistant Acinetobacter species was significantly associated with the increased usage of extended-spectrum cephalosporins, including cefepime and cefpirome(10). Further, it is not licensed for use in children under 12 year in UK and US. Hence, there is a need to tread carefully when prescribing 4th generation cephalosporins.

In conclusion, patients may exhibit the symptoms of IgE-mediated anaphylaxis to cefepime, even if they have no history of penicillin or cephalosporin allergy and no obvious prior exposure to the drug. Therefore, diagnostic tests should be performed not only with penicillin but also with cephalosporins that possess identical or similar side chain structures with the cefepime, especially when the patient was previously treated with these drugs.

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Q. What is the current recommendation to start anti-TB treatment to a sick child with clinical and radiological evidence of disseminated TB, who is having evidence of liver derangement, *e.g.*, *S. Bilirubin* 2 mg/dL and *SGPT* 500 IU/L. Please clarify whether treatment may be initiated with streptomycin and ethambutol and INH and rifampicin started later after the liver enzymes become normal.

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A. The child in question has a liver disease before starting ATT and not a drug induced hepatitis. So it becomes imperative to look for the underlying cause. It could be due to disseminated tuberculosis itself or a co-morbid condition like viral hepatitis. While attempt is made to investigate the underlying cause patient however is put on ATT. The principles of therapy are same as for drug-induced hepatitis. Yes, Streptomycin and Ethambutol can be started in the beginning, as both are non-hepatotoxic. Once the liver functions return to normal Rifampicin can be added in a dose of 5 mg/kg. After a week the LFT can be repeated and if normal, dose can be increased to therapeutic dose of 10 mg/kg. Another week later if LFT are still normal INH can be started in a dose of 2.5 mg/kg. This too can be increased similarly to 5 mg/kg after a week. In such cases one may avoid adding Pyrazinamide and continue with SHRE in intensive phase and RH in continuation phase.

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