



A short look at the role of Fab antibody fragments in clinical toxicology

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Key point

Fab antibody fragments have been used effectively for many years for the management of severe poisoning.

Immunotoxico-therapy (ITT) of acute drug intoxications is founded on intravenous dispensation of antibodies or antibody Fab fragments specific to a toxin. Mechanism of action concerns toxin-antibody complex distribution space resulting in dissociation of toxin-receptor to the vascular space from its binding site (1). Reversal of toxic effects by specific Fab fragments has been established clinically for digitalis and experimentally for colchicine and tricyclic antidepressants and snake venom.

Fab antibody fragments have been used effectively for many years in the management of severe poisoning with cardiac glycoside (digoxin, digitoxin) and a range of other structurally related compounds, including cardiotoxin plants like oleander and toads (2). Equimolar doses of anti-digoxin Fab fragments totally bind digoxin in vivo. A rough dose of Fab fragments (mg) is 80 times the digoxin body weight (mg). In case of unknown dose of ingested and inaccessible plasma digoxin/digitoxin concentration, in an adult with average body weight, the 380 mg dose of anti-digoxin Fab fragments should be given. Plasma half-life of Fab fragments is 12-20 hours, but this may be prolonged in renal insufficiency patients. The efficacy of Fab fragments is limited by 1) the administered dose, 2) the duration of the infusion and 3) any delay in administration. Fab fragments are generally well accepted (2).

Possible adverse effects of Fab treatment include hypokalemia and exacerbation of congestive heart failure and also renal function impairment in some patients. It has been suggested that Fab fragment preparations is useful for treatment of acute poisoning caused by colchicine and tricyclic, however they are not available commercially. Colchicine poisoning is not popular in Western countries, and bicarbonate therapy associate with supportive care is effective for tricyclic antidepressant poisoning. Additionally, many attempts have been made to construct anti-paraquat antibodies which are able to increase paraquat elimination from the lung tissue, but up to now, all such challenges have showed unsuccessful.

Authors' contribution

AO and FG wrote the manuscript equally.

Conflicts of interest

The authors declared no competing interests.

Ethical considerations

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