

The Effect of Iohexol and Diatrizoate on Human Plasma Cholinesterase and Butyrylcholinesterase Activity

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INTRODUCTION

The effect of two iodinated contrast media (CM) on human plasma cholinesterase (ChE) and butyrylcholinesterase (BuChE) activities was studied during the intravenous pyelography (IVP). Both ChE and BuChE are enzymes that have the capacity to hydrolyse acetylcholine and reduce the cholinergic activity.

MATERIALS AND METHODS

The two CM were: Iohexol, a non ionic substance and diatrizoate, an ionic substance. A population of 48 selected patients that was divided into four equal groups. Patients of each group received one of the CM in a simple or a double dose. Blood samples (5 mL) were taken just before the injection of the CM and 5, 10 and 20 minutes (marking the end of the examination) after it.

RESULTS

Iohexol (0.388 g/kg) provokes a reversible decrease in both ChE and BuChE plasma activities. The most prominent point of reduction is observed in 10 min. after the injection of the CM

This reduction is 14% for ChE and 8.2% for BuChE. A double dose of the same substance has a progressive and decreasing effect in ChE (peak 13.9% in 20 min) and BuChE (peak 18.4% in 20 min) activities.

Diatrizoate (0.348g/kg) has not any significant effect on ChE plasma activity. A small reduction of BuChE activity in the range of 5.4% is observed 10 min after the administration of the CM. A double dose of the same substance provokes a small progressive decrease in both ChE (peak 7.3% in 20 min) and BuChE (peak 6.5% in 20 min) activities.

In all cases, ChE and BuChE plasma activities remain in the normal range. Plasma concentrations of the electrolytes K^+ , Na^+ , Ca^{++} , and Mg^{++} , blood pH as well as blood systolic and diastolic pressure do not present any important change during the IVP.

Although no severe side effects were observed during the IVP, it is rather difficult to accept a relationship between ChE and BuChE plasma activities and CM derived adverse reactions.