

“Cardiotoxicity of Psychiatric Drugs”
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A wide variety of medications are used to treat psychiatric disorders including antipsychotics (neuroleptics), antidepressants, sedatives, monamine oxidase inhibitors, and lithium and other mood stabilizers. Because many of these drugs have narrow therapeutic indices and are used in patients with compliance and overdose concerns toxicity is common. One specific area of concern is cardiotoxicity as blockade of fast sodium channels and rectifying potassium channels are common features of constituents of these classes of medications. This discussion will focus on the diagnosis and treatment of toxicity from psychiatric drugs that result in either sodium channel or potassium channel blockade. Since some drugs actually block both sodium and potassium channels a comment on the approach to the patient with combined sodium and potassium channel blockade will follow.

Sodium channel blockade: Although the tricyclic antidepressants are the best recognized sodium channel blocking psychiatric drugs, it should be noted that the antipsychotics thioridazine and mesoridazine, as well as mirtazapine, venlafaxine, and bupropion are also implicated. Sodium channel blockade is characterized by a widened QRS complex with the presence of a right bundle branch block pattern best illustrated by S waves in leads I and aVL and an R wave in aVR. As the QRS complex prolongs, aberrantly conducted sinus tachycardia is often mistaken for ventricular tachycardia. The fact that the morphology and rate change frequently essentially excludes re-entrant ventricular tachycardia. Notable potassium channel blocking antidepressants include citalopram and escitalopram. Prolongation of the QT interval is the characteristic finding of potassium channel blockade.

Potassium channel blockade: The potassium channel is often referred to as “promiscuous” because of the vast numbers of heterogenous compounds that have the ability to bind to and block it. Most antipsychotics that block sodium channels also block potassium channels to a lesser degree. Exceptions include drugs such as ziprasidone, haloperidol and droperidol which rarely block sodium channels and significantly block potassium channels. Notable potassium channel blocking antidepressants include citalopram and escitalopram. Prolongation of the QT interval is the characteristic finding of potassium channel blockade and is associated with a risk for polymorphous ventricular tachycardia (torsades de pointes [TdP]). Recent debate has focussed on the optimal method used to calculate a corrected QT interval. Treatment of drug induced QT prolongation and TdP follows standard resuscitation guidelines and includes magnesium, overdrive pacemakers and cardioversion for unstable patients.

Combined sodium and potassium channel blockade: Hypokalemia exacerbates potassium channel blockade and aggressive treatment with sodium bicarbonate lowers serum potassium. Clinicians must be cautious not to over-treat minor prolongations in QRS duration in patients with combined sodium and potassium channel blockade because of the risk of exacerbating QT prolongation.

References:

PONENCIAS. SEGURIDAD ALIMENTARIA

Modera: Dra. Ana Mª CAMÉAN FERNÁNDEZ. Catedrática de Toxicología de Sevilla.

“Contaminantes emergentes de los alimentos. Evaluación del riesgo toxicológico”
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Los contaminantes alimentarios son sustancias que no han sido intencionalmente adicionadas a los alimentos. La contaminación puede ocurrir a lo largo de la cadena de la producción primaria. Las materias primas de origen vegetal pueden contaminarse con polutantes ambientales, tales como metales pesados, residuos de plaguicidas, agentes químicos industriales, y productos procedentes de la combustión. Las fuentes de contaminantes en materias primas de origen animal, principalmente leche y pescado son en gran parte comparables a las materias primas procedentes de los vegetales. En productos de origen animal, pueden estar también presentes residuos de medicamentos veterinarios y agentes promotores del crecimiento. Los alimentos pueden también contaminarse en el procesado con coadyuvantes tecnológicos, durante el empacatamiento y almacenamiento (a partir de plásticos, recubrimientos y conservas). Los contaminantes emergentes se evalúan por su potencial genotóxico y carcinogénico. Un número importante de estos son los metales pesados (mercurio, plomo y cadmio), nitrato, 2,3,7,8-tetrachlorodibenzop-p-dioxina, plaguicidas, cloro de vinilo, estereno y plasticantes di-(2-etilhexil) pílate y di-n-butil pílate, eticarbarmato, acrilamida, aminas heterocíclicas, hidrocarburos aromáticos policíclicos y aminas heterocíclicas, entre otros.

Los contaminantes alimentarios pueden dividirse en dos subcategorías: metales y agentes químicos orgánicos. La mayoría