Antibiomania: clinical case and literature review

Catarina Melo Santos^a; Ana Afonso Quintão^a; Raquel Luís Medinas^a; Filipe Azevedo^a; Ricardo Caetano Silva ^{a,b}

^a Departamento de Psiquiatria e Saúde Mental, Centro Hospitalar de Lisboa Ocidental, Rua da Junqueira 126, 1340-019, Lisboa, Portugal

^b NOVA Medical School | Faculdade de Ciências Médicas, Universidade Nova de Lisboa, Campo Mártires da Pátria 130, 1169-056 Lisboa, Portugal

Objectives

Review epidemiology, mechanisms and management of antimicrobial-induced mania in order to expand knowledge on this entity, based on a clinical case

Background and Aims

Mania can emerge in the context of a variety of somatic conditions and pharmacological treatments, both in patients with or without a history of affective disorder. One of the possible **precipitating factors causing secondary mania is the use of antibiotics**. [1].

Diagnosis requires a **close temporal relationship** between the symptoms and antibiotic administration.

The underlying mechanisms remain unknown. Pharmacokinetic interactions, disturbances of the circadian rhythm, immune-inflammatory dysfunction and impact on neurotransmitters, cortisol, prostaglandins, gut microbiota and mitochondrial functioning are suggested.

According to WHO data, there are **82 case reports**: 23 with clarithromycin (27,6%); 12 with ciprofloxacin (14,4%); 10 with ofloxacin (12%) and the remainder with metronidazole, cotrimoxazole and eritromicine.

The primary reports were described in patients with peptic ulcers under Helicobacter pylori eradication treatment. [2] It has been proposed that nitroimidazoles, particularly **metronidazole**, have CNS effects mediated by metabolites that inhibit protein synthesis, leading to axonal degeneration and aberrant GABA signaling. Neuroimaging studies have revealed metronidazole-induced lesions in the bilateral dentate nuclei of the cerebellum that reverse upon discontinuation of metronidazole. Metronidazole has also been shown to competitively and reversibly inhibit monoamine oxidase in animal studies, leading to dopamine accumulation with its use.

Materials and Methods

Description of clinical case of mania induced by metronidazole.

Non-systematic review in Pubmed using the terms *antibiotic*, *metronidazole* and *mania*.

Results

A **30-year-old woman**, diagnosed with **Bipolar Disorder in 2013**. In 2013, she was first admitted with a manic episode with psychotic features in our psychiatric ward.

After discharge, she remained clinically stable under valproic acid 1000mg.

In November 2018 she was admitted again in our psychiatric ward with agitation, tachyemia, expansive humor and insomnia. These symptoms start on the day after administration of medication containing metronidazole for an H. pylori infection, which she took for seven days and interrupted three days before heading to the emergency room. At day four of hospitalization, she was already euthymic and was discharged at day 11, medicated with lithium 600mg and quetiapine 25mg.

Conclusion

One of the possible precipitating factors causing **secondary mania is the use of antibiotics**, although the underlying mechanisms remain unknown.

In our clinical case, there was a **temporal relationship between taking metronidazole and the appearance of manic symptoms** in a clinically stable patient with mood stabilizing therapy and their **quick remission** after the discontinuation of the metronidazole.

Even though this is a rare condition, given the global use of antibiotics, physicians should remain alert to the possibility of neuropsychiatric symptoms, including mania, occurring during the use of these drugs and the need for their discontinuation.

References:

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