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Pleurothotonus: Epidemiology in a Psychiatric Institution and literature review

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Abstract

Background: Drug-induced Pisa syndrome is an unusual condition. It has been invocated to be more frequent in long-stay Psichiatric Institutions, but a few studies have been published in this setting.
Objectives: To know clinical characteristics and response to therapy of drug-induced Pisa syndrome in a long-stay Psychiatric Institution.
Methods: An observational retrospective cohort study was conducted along three years, over inpatients of Instituto Psiquiátrico José Germain (IPJG). Detected cases of pleurothotonus were evaluated by a multidisciplinary team compounded by a Psychiatrist, an Internal Medicine Doctor and a Chemist. Clinical features were recorded in the electronic medical history; as well as complete medication and response to therapy.
Results: Cumulative incidence was 2.54% in three years and 60% of cases were males. Mean age was 53 years (SD 10.17). Drugs implicated were: paliperidone depot, quetiapine, levomepromazine, zyprasidone, olanzapine and clozapine. All cases were resolved after treatment adjustments: 40% of them responded to anticholinergic therapy; but finally 80% of the patient needed withdrawal of offending drug.
Discussion: Drug-induced Pisa syndrome is a rare condition, with a higher rate of apparition in patients with a long history of mental disease. High grade of suspicion is needed to get a correct diagnosis. Usually it responds to treatment adjustments; so is mandatory to diagnose it to improve life quality of mental illness patients and to avoid adverse events.

Keywords: Parkinson Disease, Secondary; Dyskinesia, Drug-Induced; Diagnosis, Differential.

1. Background

Pisa syndrome or pleurothotonus is a rare condition, usually related with neuroleptics, characterized by a development of truncal dystonia. It was first described by Ekbom et al (1) in 1972, but also it can appear with other drugs and patients who are not receiving any antipsychotic medications (2-4).

2. Objective

To describe diagnosed cases of patients with drug-induced Pisa syndrome in a long-stay Psychiatric Institution and to characterize the clinical features and response to therapy of this condition.

3. Methods

Characteristics of patients diagnosed of Pisa syndrome at Instituto Psiquiátrico Jose Germain (IPJG) were collected for 3 years (from January 2012 to December 2014). IPJG is a monographic institution dedicated to the attention of patients with mental illness with 173 beds of medium and long-stay. When a patient with suspected drug-induced pleurotothonus was detected, a multidisciplinary approach was done by Psychiatrists, Internal Medicine physicians and Pharmacists. Each confirmed case of axial dystonia was followed by this multidisciplinary team, in order to try to resolve this side effect. Multidisciplinary evaluation, modifications in treatment and response were registred in the electronic medical history, and suspected adverse drug reactions (ADRs) to the pharmacovigilance centre were reported when needed.

Approval by an Ethical Committee was unnecessary because all actions are included in habitual clinical practice.

4. Results

Five cases of pleurothotonus were analyzed during the study period, so cumulative incidence was 2.54% in three years. Median number of drugs prescribed to these patients was 10 (SD 5.19). Table 1 shows the most relevant data.

Table 1. Clinical characteristics of cases detected of Pisa syndrome

	Case 1	Case 2	Case 3	Case 4	Case 5
Gender	F	M	M	F	M
Age (yr)	56	59	35	56	59
Diagnosis	Personality disorder	Schizoaffective disorder	Paranoid schizophrenia	Personality disorder	Residual schizophrenia
Direction of trunk	Right	Right	Left	Left	Right
Back pain	No	Yes	Yes	No	No
Onset of pleurothonus	Acute. 5 days	Acute. 2 days	Insidiously. 90 days	Insidiously. 5 months	Acute. 1 day
Main drug implicated	Levomepromazine	Paliperidone palmitate depot	Paliperidone palmitate depot	Quetiapine	Clozapine (rising dose)
Other potencial resposive drugs	Quetiapine	None	Zyprasidone	Olanzapine	None
Exposure time to psychotropics (yrs)	0.5	30	15	22	30
Exposure time to responsible drug (months)	6	8	4	6	0.5
Accompanying extrapyramidal signs	Parkinsonism	Parkinsonism	Akathisia	Parkinsonism	None
Response to anticholinergics	Unchanged	Unchanged	Improved	Unchanged	Improved
Beneficial treatments	Withdrawal	Withdrawal Switch to Clozapine	Biperiden Reduction	Withdrawal	Biperiden
Duration until recovery after treatment (days)	10	35	33	9	2
Organic brain changes (TAC)	No	Yes	No	No	Yes

†F: female; M: male; yrs: years

5. Discussion

Few data on the prevalence are found in literature. In a Canadian study it was reported a prevalence rate of 8.3 % (5); whereas in a German study a prevalence rate of 0.037% was found (6).

Found clinical features were like those reported in literature: persistent dystonia of the axial musculature, tonic lateral flexion with slight rotation of the trunk, indifference to abnormal posturing and worsening with walking or sitting (1, 2, 6, 7). Apparition can be acute or insidious. It is also necessary the exclusion of neurological diseases and the previous exposition to potencially responsible drugs: it is described with both typical and atypical antipsycotics without a clear difference in incidence rate. Other potentially causing drugs are: tricyclic antidepressants, selective serotonin reuptake inhibitors, cholinesterase inhibitors, antiemetic drugs, lithium carbonate and benzodiazepines (2, 7-14).

Clinicians must have high degree of suspicion to diagnose this disorder because its diagnosis is usually clinical (15). Differential diagnosis has to be established with: hysteria, catatonia, congenital scoliosis, neurological diseases such as Parkinson's disease, Huntington's disease, Wilson's disease, encephalitis, etc. DatSCAN can be used to help to diagnose idiopathic Parkinson disease (16) but is not usually necessary because a correct clinical examination are often enough to reach a correct identification (2).

Recognized risk factors are: female sex, organic brain changes (seen it computed tomography, such as diffuse cortical atrophy), prior treatment with classic neuroleptics, recent changes in treatment, combined treatment, advance age and low level of serum iron (2, 7 - 11).

Pathophysiological mechanisms are not clear. It is invocated an imbalance between cholinergic and dopaminergic neurotransmission, with a predominance of the first one (2, 7, 17). However, probably more complicated neurochemical changes in the brain may be involved, with participation of other systems (2, 10, 18-20).

Concerning treatment, about 40% of patients respond to anticholinergic drugs. In some reported cases, oral supplements of iron and calcium have been shown useful (8); in this study patients had not such deficiencies, so they were not prescribed. Typically, pleurothotonus disappears after

discontinuation or dose reduction of responsible drug. This occurred in 80% of patients of this study (2, 7-10). These features are absent in tardive dystonia.

Another strategy is to switch neuroleptic treatment to clozapine, because the apparition of this syndrome with this drug is infrequent (20); however, pleurothotonus can also appear with this drug (8, 9).

In conclusion: in long-stay psychiatric institutions, attending doctors have to remember this rare side effect, because it is more frequent in this subgroup of population and it has an effective treatment.

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