

Infectious disease evaluations in a psychiatric unit, an observational study

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Patients in adult psychiatric wards present infectious complications or pathologies that mimic an infectious condition, and there is little information on this subject. **Objectives:** To know the frequency and infectious and non-infectious complications treated by infectious disease specialists in a psychiatric intensive-care hospitalization unit for adults and their outcomes. **Methods:** Observational study between 2016 and 2021. **Results:** 37 patients with 41 events were evaluated. Almost half of the visits to these events originated from an antimicrobial stewardship program (46.3%). In 68.3% of the events, complementary studies were requested; in 14.6%, referral to other specialties; in 26.8%, an antimicrobial treatment was started; and in 75%, modifications were made to previous schemes. An infectious cause was identified in 30 of 41 events (73.2%) that included the following conditions: respiratory (31.7%), skin (9.8%), urinary (7.3%), gynecological (2.4%), one case of bacteremia with unknown source (2.4%), sequential infections (4.9%) and HIV therapy dropouts (7.3%). In the 11 remaining events, non-infectious causes were identified (26.8%): pulmonary thromboembolism, drug hepatotoxicity, false positive VDRL and HIV tests, steroid-induced psychosis in an HIV patient with thrombocytopenia, fever without etiology, residual positive SARS-CoV-2 PCR test, low O₂ pulse oximetry due to oversaturation and neuroleptic malignant syndrome. There was no mortality. **Conclusions:** Patients in psychiatric hospitalization wards suffer from a great diversity of infectious problems during their stay with conditions that simulate infections. An antibiotic surveillance system can detect half of these conditions. The infectious diseases visits allow for advising or reorienting of the study and modifying the antibiotic treatment.

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Key words: Antimicrobial Stewardship; Infectious Disease Medicine; Neuroleptic Malignant Syndrome; Psychiatry; Respiratory Tract Infections.

Visitas infectológicas a una unidad psiquiátrica, un estudio observacional

Los pacientes en salas de hospitalización psiquiátricas de adultos presentan complicaciones infecciosas o patologías que simulan un cuadro infeccioso y existe escasa información sobre este tema. **Objetivos:** Conocer la frecuencia y tipo de complicaciones infecciosas y no infecciosas atendidas por especialistas de infectología en un Servicio de hospitalización psiquiátrica de cuidados intensivos de adultos y sus desenlaces. **Métodos:** Estudio observacional entre el 2016 y 2021. **Resultados:** Se visitaron 37 paciente con 41 eventos. Casi la mitad de las visitas en estos eventos se originó por seguimiento de antimicrobianos (46,3%). En el 68,3% de los eventos se solicitaron estudios complementarios, en 14,6%

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la opinión de otras especialidades, en 26,8% se inició un tratamiento antimicrobiano y en 75% se hicieron modificaciones a esquemas previos. En 30 de 41 eventos se identificó una causa infecciosa (73,2%) que incluyeron las siguientes condiciones: respiratorias (31,7%), cutáneas (9,8%), urinarias (7,3%), ginecológicas (2,4%), bacteremia sin foco (2,4%), infecciones secuenciales (4,9%) y abandonos de terapia en pacientes VIH (7,3%). En los 11 eventos restantes se identificaron causas no infecciosas (26,8%): tromboembolismo pulmonar, hepatotoxicidad por drogas, test VDRL y VIH falsos positivos, psicosis por esteroides en un paciente VIH con trombocitopenia, fiebre sin etiología, PCR SARS-CoV-2 positiva residual, desaturación de O₂ por sedación y síndrome neuroléptico maligno. No hubo mortalidad en esta serie. **Conclusiones:** Los pacientes en salas de hospitalización psiquiátrica sufren de una gran diversidad de problemas infecciosos durante su estadía junto a cuadros que simulan infecciones. Un sistema de vigilancia antibiótica permite detectar la mitad de estas condiciones. Las visitas infectológicas permiten asesorar o reorientar el estudio y modificar el tratamiento antibiótico.

Palabras clave: Infecciones del Sistema Respiratorio; Infectología; Programas de Optimización del Uso de los Antimicrobianos; Psiquiatría; Síndrome Neuroléptico Maligno.

There are few reports in the international literature on visits by infectious disease specialists (IDS) to psychiatric hospitalization wards for adult patients and their contribution to the differential diagnosis and management of different pathologies. Communicating this experience can be useful to healthcare workers for appropriate management. Our regional reference hospital at Valdivia in Chile, has a psychiatric hospitalization unit with 20 beds for adult patients. Since 2016, infectious disease physicians have regularly visited this Unit. These data allowed us to propose a descriptive study with the aim to investigate the reasons of these evaluations, the interventions carried out, their results and the final diagnoses identified.

Patients and methods

Study Design

Retrospective observational using information of patients admitted to the psychiatric hospitalization unit for adult patients (20 beds, average bed occupancy 97.3% per year).

Identification of patients attended

The patients were identified using the database of one of the researchers involved (AF) who

recorded each of the visits made between 2016 (September) and 2021 (December).

Data extraction

A template was used to extract demographic data, psychiatric diagnoses, comorbidities, date of admission, clinical picture associated with the visit, and whether it was triggered by antimicrobial control. Laboratory results, images, cultures or other microbiological studies were also extracted. Psychiatric diagnoses were quantified in a multiaxial manner, especially for axis I focused on the clinical picture (bipolar disorder, schizophrenia, mayor depression, exogenous psychosis, post-traumatic stress disorder, eating disorders, dementia, psychosis or other) and for axis II, that details information on developmental and personality disorders (personality disorders and intellectual disabilities). Data on specific infectious disease interventions (complementary exams or initiation or modification of antimicrobial therapy), drugs in use, and follow-up visits were also retrieved. When applicable, data on the results of antimicrobial treatment (clinical improvement/cure or failure) was recorded.

Events, data classification and analysis

Because some patients had different potentially infectious conditions during their hospital stay

that were temporarily separated, the set of visits associated with each one of them was considered as one event. The final diagnostic condition of each event was classified into mutually exclusive groups: non-infectious causes (pulmonary thromboembolism, neuroleptic malignant syndrome, others) or infectious: acute infectious morbidity such as pneumonia or acute respiratory infection, urinary tract infection (UTI) or asymptomatic bacteriuria or serological conditions (HIV, syphilis). Interventions and treatment outcomes were also analyzed. For this study, hospital-associated pneumonia (HAP) was defined as an event with respiratory symptoms and infiltrates on imaging studies that began > 72 h after admission. Aspiration pneumonia was defined as a respiratory event present on admission with bibasal infiltrates on imaging. Unspecified lower respiratory infection (LRTI) was defined as lower respiratory symptoms with no available imaging study or etiology. Results are presented descriptively with measures of central tendency and dispersion (median, interquartile range) for quantitative variables and as percentage values for categorical variables.

Ethical aspects. This work was approved by the Scientific Ethics Committee of the Valdivia Health Service.

Results

General features

During the study period, 37 patients were evaluated totalizing 41 events. These visits represented 0.5% of the total visits made by IDS within the Hospital. The characteristics of these evaluated patients are presented in Table 1. A profile of middle-aged adult patients arose with a slight predominance of male patients and a low frequency of comorbidities. The most common comorbidity was HIV infection in 4 patients, all diagnosed before admission, 3 of them with therapy discontinuation and none in AIDS stage. The median viral load closest to admission was 62.5 copies/mL (IQR 22.7-41497 copies/mL) and the CD4 lymphocyte count was 335/ μ L (IQR 124-466/ μ L).

The prevalence of tobacco, alcohol or illicit substance use was high (close to 30%). Different psychiatric clinical pictures (Axis I) were present

in this series, predominantly schizophrenia and organic psychosis. Substance use disorders in different forms (associated with different psychiatric conditions) were prevalent. For axis II, a relevant fraction of patients had intellectual disabilities or Cluster B Personality Disorder (histrionic, borderline, narcissistic, psychopathic) (Table 1). HIV patients were admitted by suicide ideation, post-traumatic stress disorder, tramadol addiction and psychosis, respectively.

Clinical pictures

Visits in events (independent of the final diagnosis) were motivated by fever without focalization, upper or lower respiratory symptoms, urinary, skin, gynecological symptoms or by serological findings (Table 2). The most frequent conditions corresponded to lower respiratory symptoms (31.7%) and serological conditions (14.6%). In 5 cases (12.2%), the visit was not due to the presence of symptoms but rather to the follow-up of HIV patients that abandoned therapy or other conditions (see below).

Near half of the visits originated by the Antimicrobial Stewardship Program (ASP; 19 out of 41; 46.3%), and the rest from consultations. Table 3 shows the antimicrobials that led to an ASP visit, mainly involved cases of fever without focalization (5 out of 19) or respiratory conditions (9 out of 19). At least 10 compounds were detected in these initial prescriptions (isolated or combined).

Study and interventions

Table 4 shows the interventions and follow up carried out in each event, underlying the need for several associated visits, the high frequency in which complementary studies (laboratory, microbiology or images) were requested and antimicrobial treatment changes suggested. Specifically, in 18 of 24 antimicrobial treatments, interventions consisted in modifying the scheme (in 4 cases, 1 with spectrum de-escalation), switching to the oral route or suspending the treatment because an infection was ruled out (Table 4). Treatment initiation was related to HIV therapy in patients who had previously abandoned it, latent syphilis, suspected influenza or ectoparasites.

Final classification of *events and outcome*. In 30 events (73.2%) an infectious cause was identified (Tables 2 and 5). An important finding was the wide diversity of infectious problems, with-

Table 1. General features of 37 admitted patients evaluated during Infectious Diseases Specialist visits at a Psychiatric Unit, Hospital Base de Valdivia, Chile 2016-2021

Parameter	Results	
<i>Social and demographics</i>		
Age in years: median; interquartil range	42	28-56
Male gender n; %	20	54.1%
<i>Comorbidities</i>		
Diabetes mellitus type 2 n; %	1	2.7%
Chronic liver disease n; %	1	2.7%
Epilepsy n; %	3	8.1%
HIV/AIDS n; %	4	10.8%
<i>Consumption</i>		
Smoking (current) n; %	10	27%
Excessive alcohol consumption n; %	11	29.7%
Illicit drugs n; %	11	29.7%
<i>Psychiatric diagnosis</i>		
Bipolar disorder n; %	2	5.4%
Squizophrenia n; %	9	24.3%
Mayor Depression; %	5	13.5%
Exogenous psychosis n; %	3	8.1%
Posttraumatic stress disorder n; %	1	2.7%
Dementia n; %	2	5.4%
Organic psychosis n; %	7	18.9%
<i>Other diagnosis</i>		
Addiction to illicit drugs n; %	9	24.3%
Alcohol addiction n; %	2	5.4%
Withdrawal syndrome n; %	2	5.4%
Organic brain damage n; %	3	8.1%
<i>Development disorders/personality</i>		
Intellectual disabilities n; %	11	29.7%
Personality disorder Cluster A n; %	0	0%
Personality disorder Cluster B n; %	8	21.6%
Personality disorder Cluster C n; %	0	0%
Previously admitted to a long-term care psychiatric unit	6	16.2%

out a predominant profile except for the relative high frequency of respiratory infections (31.7%). These were distributed as cases of aspiration pneumonia, HAP, viral respiratory infections, and unspecified lower respiratory infection (presence of lower symptoms without further studies or without pneumonia on images). One case of HAP developed after electroconvulsive therapy (ECT).

The skin conditions involved infected decubitus ulcers, cellulitis secondary to containment measures or glass cutting, and ectoparasitosis (scabies and pediculosis in one patient). One case of bacteremia without source and several forms of urinary infections were also observed, including one complicated with interstitial nephritis due to ciprofloxacin (Figure 1), another with prostatitis

Table 2. Clinical presentation for event, Hospital Base de Valdivia, Chile 2016-2021

Clinical presentation or organ/system involved	Infectious n (%)***	Non infectious n (%)***	All n (%)
Fever without source	3	4	7 (17.1%)
Upper respiratory tract	1	0	1 (2.4%)
Lower respiratory tract	12	1	13 (31.7%)
Urinary	3	0	3 (7.3%)
Skin	4	0	4 (9.8%)
Gynecological	1	0	1 (2.4%)
Serological finding	3	3	6 (14.6%)
Several systems involved*	0	1	1 (2.4%)
No symptoms**	3	2	5 (12.2%)
Total	30 (73.2%)	11 (26.8%)	41(100%)

*: Fever, rash and diarrhea; **: 4 HIV patients (three with therapy dropout plus one with steroid-induced psychosis); ***: see table 5 for details.

Table 3. Compounds and clinical sources involved during events linked to the Antimicrobial Stewardship Program, Hospital Base de Valdivia, Chile 2016-2021.

Compound	n	%	Clinical source (n)
Cefazoline	1	5.3%	Skin (1)
Ceftriaxone	7	36.8%	Fever without source (2); lower respiratory tract (3); Urinary (2)
Piperacillin/tazobactam	4	21.1%	Lower respiratory tract (3); fever without source (1)
Imipenem*	1	5.3%	Skin (1)
Vancomycin**	3	15.8%	Fever without source (2); lower respiratory tract (1)
Levofloxacin iv	1	5.3%	Lower respiratory tract (1)
Clindamycin (oral)	1	5.3%	Lower respiratory tract (1)
Fluconazole	1	5.3%	Ginecological (1)
Total	19	100%	

*: with amikacin; **: In one case associated to piperacilin/tazobactam and in other to ceftazidime.

in a patient with recent use of a urinary indwelling catheter, and one case of asymptomatic bacteriuria. We also observed 2 cases with sequential infections: one patient with influenza and then pneumonia and another with recurrent lower UTI and finally acute pyelonephritis (Table 5).

The 3 cases of syphilis were classified as latent forms due to the absence of skin, mucosal lesions or neurological involvement. In 2 of them, neurosyphilis was ruled out by a CSF study in patients affected by suicidal ideation or behavioral disorders. None of the syphilis cases was associated with HIV. Three patients with HIV

infection were admitted by psychiatric problems with therapy abandonment, all with a history of illicit drug use. Another case under treatment, presented steroid-associated psychosis indicated for HIV-associated thrombocytopenia.

The therapeutic response to antibiotics was analyzed in 23 acute infectious events, excluding for this purpose patients with HIV infection, latent syphilis, and asymptomatic bacteriuria. In 21 of them, improvement was observed (87%), one evolved with recurrent urinary tract infections (4.3%) and another with deterioration and transfer to another hospital (4.3%). Non-infectious

Table 4. Detail of Infectious Diseases interventions during events, Hospital Base de Valdivia, Chile 2016-2021

Intervention	n	%	Intervention
<i>Visit by event</i>			
One	14	34.1%	
Two	15	36.6%	
Three or more	12	29.3%	
Additional exams	28	68.3%	Laboratory, images or microbiological studies
Request of evaluation by other medical specialties	6	14.6%	
Antimicrobial treatment initiation	11	26.8%	For HIV, latent syphilis, influenza suspicion, ectoparasites
Interventions over previous antimicrobial treatments	18	75%	Over 24 patients receiving antimicrobial treatment, and 43% if all events are considered
Scheme adjustment	4	16.7%	Dose, compound and/or, spectrum
Change to oral route	7	29.2%	Over patients receiving antimicrobial treatment, and 17.1% if all events are considered
Suspension	7	29.2%	Over patients receiving antimicrobial treatment

events, although less frequent, were also diverse in their etiology (Table 5). Two events of neuroleptic malignant syndrome (NMS) were detected in the series. One, with a cumulative dose of 150 mg of haloperidol and 3,000 mg of chlorpromazine during the last 30 days and a recent increase in doses. The patient required ICU admission due to CNS depression and had an elevated creatine kinase (CPK) value (4,826 U/L; reference value < 190 U/L). The second, with chronic use of high doses of antipsychotic drugs (50 mg of haloperidol and 200 mg of chlorpromazine intramuscularly in the last month) on whom an intentional or accidental overdose was suspected. This patient also had high CPK values (2,759 U/L). Both cases presented with hyperthermia that led to the initiation of antimicrobial therapy for a presumed infection.

The non-infectious group also included one case of pulmonary thromboembolism with fever in a patient with catatonia without receiving deep vein thrombosis prophylaxis and two events of adverse drug reactions: one with drug-induced hepatitis with fever, rash and diarrhea secondary to the use of haloperidol and/or quetiapine and other with steroid-induced psychosis in a patient with HIV infection and thrombocytopenia. Other non-infectious

cases included a request for evaluation for a residual positive PCR for SARS-CoV-2 without symptoms at admission, a false positive VDRL value (weak positive reaction with a negative treponemal test) in a female patient with positive IgM anticardiolipin antibodies but without autoimmune manifestations and 2 cases with false positive HIV tests (discarded by the National Reference Laboratory), in one of them with a history of THC and cocaine paste base consumption. This group also includes a patient with fever but with an extensive negative study, and another patient with oversedation with low pulse oximetry with pneumonia ruled out.

Two patients required temporary ICU transfers, one with influenza and partial respiratory failure and the other with drug-induced hepatotoxicity (see above). There were no fatalities in the series.

Due to the small sample size, a statistical analysis and the final diagnosis was not performed.

Discussion

The results of this work reveal that patients in psychiatric hospitalization wards suffer from a great diversity of infectious problems during their

Table 5. Distribution on final diagnosis associated to events evaluated by the infectious disease specialist, Adult Psychiatric Hospitalization Unit, Hospital Base de Valdivia, Chile 2016-2021

Diagnosis	n	%	Etiology/comments
Infectious causes	30	73.2%	Over 41 events
Aspirative pneumonia	1	2.4%	Without microbiological studies
HAP	3	7.3%	Without microbiological studies, one 4 days after the last of 6 sessions of electroconvulsive therapy
LRTI unspecified	6	14.6%	<i>E. coli</i> in one case post extubation
Viral respiratory infection	3	7.3%	rhinovirus, influenza A (2 cases)
Subtotal Respiratory tract	13	31.7%	
Bacteraemia	1	2.4%	<i>Streptococcus dysgalactiae</i> ; source unknown
Lower urinary tract infection	1	2.4%	<i>E. coli</i> , complicated by an adverse drug reaction
Acute prostatitis	1	2.4%	No agent identified
Asymptomatic bacteriuria	1	2.4%	<i>K. pneumoniae</i>
Skin infections	4	9.8%	Polymicrobial infected decubitus ulcer by <i>E. coli</i> , <i>P. aeruginosa</i> and <i>E. faecalis</i> , rest without microbiological studies
Vulvovaginitis	1	2.4%	Without microbiological study
Multiple sites	2	4.9%	Influenza followed by pneumonia; Recurrent urinary tract infections (<i>P. mirabilis</i> , <i>E. faecalis</i>) followed by acute pyelonephritis by <i>E. coli</i> with an extended spectrum beta-lactamase phenotype.
Syphilis (latent)	3	7.3%	Titles 1:2; 1:4 and 1:32, respectively
HIV therapy dropout	3	7.3%	
Non-infectious causes	11	26.8%	Over 41 events
Neuroleptic malignant syndrome	2	4.9%	Hiperthermia, muscle rigidity and creatinphospokinase increase associated to haloperidol and chlorpromazine in both cases
Pulmonary thromboembolism	1	2.4%	In a bedridden patient with catatonia
Residual SARS-CoV-2 PCR positivity	1	2.4%	
Drug-induced hepatotoxicity	1	2.4%	By haloperidol or quetiapine
False VDRL positive test	1	2.4%	Positive anticardiolipine antibodies
False HIV positive test	2	4.9%	
Steroid-induced psychosis	1	2.4%	For thrombocytopenia in an HIV patient
Fever of unknown cause	1	2.4%	Resolved
Low pulse oxymetry secondary to oversedation	1	2.4%	Pneumonia discarded

HAP: Hospital Acquired Pneumonia; LRTI: Lower Respiratory Tract Infection.

stay, that they also present other conditions that simulate infections and that they often receive antibiotics. Our findings also indicate that an antibiotic surveillance system makes it possible to partially detect these conditions and generate an evaluation that allows advising or reorienting the

study and modifying antibiotic treatment. We are not aware of a similar work in the literature and therefore we believe that this research contributes to the knowledge of infectious diseases in psychiatric wards.

The infectious causes were diverse, involving

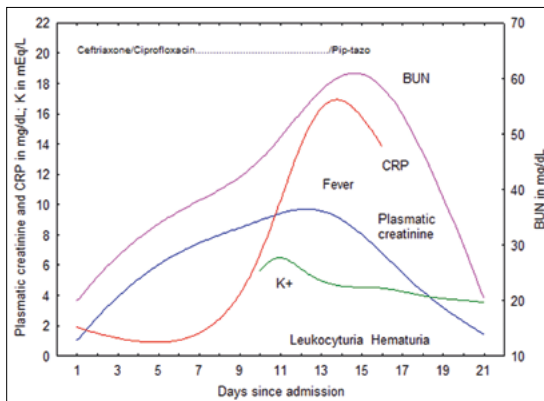


Figure 1. Evolution of different laboratory parameters in a patient who developed interstitial nephritis with acute renal failure due to ciprofloxacin. The figure indicates the period of exposure to this compound. The infectious disease visit was made during treatment with piperacillin-tazobactam and it was decided to suspend it. Periods with leukocyturia, hematuria or fever are indicated. Patient did not require dialysis. The curves were fitted by locally weighted scatterplot smoothing (Lowess) using the software package Statistica 8.0 StatSoft, Inc. CRP: C-reactive protein; BUN: blood urea nitrogen; Pip-tazo: piperacillin-tazobactam.

respiratory, urinary, skin, gynecological pathologies, latent syphilis, HIV, and even a case of bacteremia without a known source. The skin symptoms were directly related to the psychiatric pathology: ectoparasitosis or skin and soft tissue infection associated with injuries caused by glass cutting or secondary to physical restraint measures. HIV prevalence was in accordance with the highest frequency of this condition in patients with severe mental illness compared to the general population¹. In these patients, the use of illicit drugs is a risk factor for abandoning antiretroviral therapy and we were able to verify this behavior in the 3 patients who presented this problem². In systematic reviews, depression is another factor associated with treatment dropout³. It was also not unexpected to find 3 cases of latent syphilis due to the higher seroprevalence of this infection in people with mental disorders^{4,5}. The association of positive VDRL titers with neurological symptoms makes it necessary to rule out neurosyphilis, regardless of the titers found. However, isolated psychotic involvement is not characteristic of early or late forms of syphilis^{6,7}.

The higher relative prevalence of respiratory

symptoms in our series is explained by CNS depression, withdrawal syndrome, oversedation, contagion in the same units with viral respiratory agents, electroconvulsive therapy and/or smoking⁸⁻¹⁵. ECT adverse effects include fractures, laryngeal or bronchial spasms, arrhythmias, angor pectoris, and aspiration pneumonia among others¹¹.

Our work detected 2 events associated with false positive tests for HIV, a phenomenon that has decreased with the parallel improvement in specificity in the most recent tests (> 99.5%). Known causes of erroneous results include pregnancy, some parasitic infections, chronic kidney disease on hemodialysis, hepatitis B and anti-rabies vaccination¹⁶. In addition, we also detected a case of a false positive VDRL test associated with anticardiolipin antibodies as reported in the literature^{17,18}.

In this series we observed several events associated with adverse drug reactions including respiratory depression from sedatives, neuroleptic malignant syndrome, interstitial nephritis, hepatotoxicity, and steroid-induced psychosis. In some of them, antimicrobials were started due to the presence of fever or hyperthermia and in one case case, antimicrobial caused the adverse complication.

Although NMS is a rare complication, occurring in < 1% of typical or atypical antipsychotic drug treatments, it can be life-threatening (in approximately 10%) and is associated with complications such as aspiration pneumonia or renal failure due to myoglobinuria. This condition is exclusively clinically diagnosed and is recognized by the presence of increased body temperature (which does not respond to antipyretics), muscle rigidity (generalized and symmetrical), delirium, and dysautonomic manifestations (variable pulse rate, diaphoresis, labile hypertension). Several risk factors have been described, the most frequent being those related to treatment variables such as recent therapy initiation, parenteral and/or high doses, some of which were identified in our patients. Laboratory can indicate the presence of leukocytosis and increased CPK, the latter useful in suspicion and follow-up, although essentially, NMS is an exclusion diagnosis. The main axis of treatment is suspension of the compound involved, which allows improvement in about 3 to 10 days¹⁹⁻²¹.

An event of hepatotoxicity due to antipsychotic drugs was observed associated with fever and rash but without eosinophilia. The drugs most frequently involved in idiosyncratic forms of hepatotoxicity correspond are antibiotics, dietary supplements, cardiovascular drugs, antineoplastic drugs, and drugs active on the central nervous system. It is a potentially lethal complication or one that may require organ transplantation and the treatment, as in this case, is discontinuation of the suspected drugs, including even those that were started in the last few months. A timely suspension allows improvement in most patients^{22,23}.

Interstitial nephritis is mainly linked to medications and among them, antibiotics, especially amoxicillin and ciprofloxacin. Eosinophilia, eosinophiluria and/or fever occur in less than a third of patients with drug-induced interstitial nephritis, making suspicion difficult²⁴. Mood disorders, psychosis, or delirium due to corticosteroids are rare complications that appear in about 6% of those treated with these compounds and their risk increases proportionally to the dose, especially with > 40 mg/day and possibly with concomitant drugs that decrease their metabolism. Ninety percent appear in the first 6 weeks of treatment. About 75-90% recovers only with discontinuation or reduction of the dose but a fraction is left with persistent disorders for several months^{25,26}.

Our work has limitations derived from the low number of cases and the lack of microbiological information in some events. However, it sheds light on the importance of the IDS visits in psychiatric units, the challenge they represent and the contribution that can be made. Our data suggest that the respiratory, skin, and urinary symptoms are mostly associated with an infectious cause. In contrast, the presence of fever or a serological result does not necessarily imply a final infectious condition. It also should be mentioned that part of the respiratory complications observed in this work, could be prevented through vaccines for some viral respiratory infections. Likewise, situations of prolonged prostration could benefit from deep vein thrombosis prophylaxis.

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