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Clinical Features of Patients Newly Admitted to the Emergency Department of a Psychiatric Hospital with an Emphasis on Physical Examination

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Abstract

Introduction: Many medical diseases and their related signs and symptoms are not identified in routine assessments in emergency departments.

Objective: We investigated the prevalence of abnormal findings in physical examination of the patients who were newly admitted to emergency department (ED) of a psychiatric hospital.

Methods: We studied 200 patients (143 males, 71.5%) who were recently admitted to the ED of a psychiatric university hospital during a 4-month period in 2018. A thorough physical and neurological examination was performed on each subject.

Results: Nearly all of the patients (99.3%) had at least one positive finding in physical (non-neurological) examination and 95% had at least one positive neurological finding. We also found at least one problem in gastrointestinal, respiratory or cardiac system of 22.1%, 24% and 33% of the subjects, respectively. The most frequent findings were in cranial nerve I (30%, more common in substance abuse disorder), and visual acuity (52.6%), as well as recent memory (%68.7), attention (%33.7), orientation to time (%29.5), hypokinetic movements (%28.1, more common in females and psychotic patients), akathisia (41.6%), and skin (%85.1, more common in substance abuse and personality disorders). T wave changes were seen in 31.9% and arrhythmia in 16% of the patients.

Conclusions: Abnormal findings in examination of the patients admitted to EDs are very prevalent, but most of the abnormalities are not detected or reported in the routine ward examinations. More emphasis should be placed on the examination of olfactory nerve (especially in patients with substance abuse disorder), cognition (especially in older adults), extrapyramidal system, heart, abdomen and skin (especially in patients with personality disorder) during the first week of admission in a psychiatric emergency setting.

Key words: Comorbidity; Emergency Service, Hospital; Neurologic Examination; Physical Examination; Psychiatric Department, Hospital; Symptom Assessment

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INTRODUCTION

Diagnosing and management of medical disorders in patients who present with psychiatric complaints is a major challenge in emergency department (ED) (1). Many patients who visit EDs with psychiatric complaints suffer from medical conditions. However, a large number of medical diseases are not identified in routine assessments that are performed in EDs (2). For example, depressed patients are twice more likely to develop type 2 diabetes, and the incidence of stroke and myocardial infarction among them are three and five times higher than non-depressed people, respectively (3). Schizophrenia is associated with higher rates of diabetes, osteoporosis, obesity and cardiovascular disorders (4-7).

Overall, it is estimated that life expectancy in severe psychiatric patients is reduced by 13-30 years. Reasons for increased mortality and morbidity due to other medical conditions in psychiatric patients include medication side effects

(weight gain, diabetes, dyslipidemia), lifestyle (smoking, diet and poor nutrition, lack of activity and obesity) and the inability to access health services (8). There is evidence that shows physical health of patients with mental disorders is not adequately addressed (9). Furthermore, studies on inpatient settings have shown that physical illness is frequently either overlooked or not adequately treated (10). Most psychiatrists do not routinely perform a physical examination on their patients, and one-third of them have limited confidence in their ability to perform tests or believe that this should be done by specialists other than psychiatrists (11-14). As a result, a large proportion of the physical problems might remain unnoticed. Prevalence of medical comorbidities in patients who are admitted with psychiatric disorders has been reported to be as high as 49%. The rate of medical comorbidity is 26% for patients with bipolar disorder, 13% for patients with schizophrenia and 8% for patients with depressive disorders. Diabetes mellitus, hypothyroidism, and hypertension were the most common medical comorbidities (15). Recommendation have been made by some experts to improve the quality of screening methods for detection of medical diseases and reduce the cost of unnecessary lab tests (1, 16). However, no consensus exists about the procedures that should be performed as "medical clearance" (17). Olshaker et al. suggest that a basic history and physical examination and initial assessment of vital signs could identify the majority of medical problems and substance abuse in psychiatric patients presenting to ED (18). To perform a successful targeted physical examination, it is crucial to know the relative frequency of abnormal findings in the patients referring to an ED. In this way, physicians can pay more attention to the areas that are more likely to be affected. Therefore, we decided to investigate the frequency of abnormal physical signs in patients who were recently admitted to the emergency department of a psychiatric hospital and also find out how many of these physical findings would remain undiscovered in the routine examination performed in the ward.

Methods

Study design and setting

This was a cross-sectional study. In this study, we performed a thorough physical and neurological examination on all of the newly admitted patients during the first seven days of their admission to the ED of Iran Psychiatric Hospital, over a 4-month period, from August to November 2018. Iran Psychiatric Hospital is a large referral public hospital in Tehran, Iran, which is also an educational center for psychiatry residents and medical students. Patients who were discharged before the examinations or were not interested in participating were excluded from the study.

File review

Patients' files were reviewed for the following data: history of mental disorders, patient's drug abuse, paraclinical findings (complete blood count, liver function test, electrolytes, fasting blood sugar, thyroid function test, urea, creatinine, urine analysis, lipid profile, urine toxicology (methamphetamine, morphine, amphetamine, cannabis)), electrocardiograph (ECG), and initial diagnosis. Furthermore, we reviewed the results of the routine physical examinations that were recorded in the files by interns.

Examinations

All examinations were conducted by a third-year resident of psychiatry, who was trained and observed to perform the correct examinations for two months, under the supervision of an internist and a neurologist. She examined 40 patients in her training to confirm her competence, before starting exams of the study. During the study, if she encountered a problem in an examination, she consulted with the internist or neurologist of the study. Interviewer asked patients about the following items: age, history of psychiatric disorders, history of medical problems, and smoking and using other substances in the previous month.

Examinations included vital signs, observations (traumatic effects, cyanosis, tattoos, jaundice, pale conjunctiva, facial hyperemia, rash/scar, palmar erythema, clubbing, injection site), palpation (sweating, tremor, lymphadenopathy), examination of cardiovascular system (jugular venous pressure (JVP), edema, pulse rate, heart sounds), examination of respiratory system (history of cough, pulmonary sounds, lung expansion), examination of digestive system (tenderness, liver size, enlargement of spleen), examination of extremities (cyanosis, edema, clubbing, arterial pulse), autonomic examination (orthostatic hypotension, flushing), and examination of the nervous system, which consisted of the following components:

- Level of consciousness: described as awake or drowsy.
- Orientation to time, place, and person, and right and left orientation.
- Attention: serial seven test.
- Memory: evaluated using the register and recall

subset of the Mini-Mental State Examination (MMSE) for immediate and recent memory.
- Primitive reflexes: palmomental, grasp, and snout reflexes.
- Speech: described as normal or dysarthric.
- Cranial nerves: each cranial nerve was examined individually.
- Muscle tone, deep tendon reflexes, and evaluation of the extrapyramidal system (presence of tremor, hypokinesia, akathisia, dystonia, chorea, or any other abnormal movement).
- Cerebellar system: evaluated using the finger to nose, and heel to shin tests.

To evaluate the differences between targeted and routine examinations, we compared interns' examinations with resident's examinations. We also evaluated the association of findings with gender, age and primary psychiatric diagnosis.

Ethical considerations

An informed consent was obtained from all of the participants. If the patient was not able to give a consent, we asked their surrogate or guardian instead. It should be noted that all of the patients' information remained confidential throughout the course of the study, and a code was allocated to each person and the final results were reported generally (not individually). All examinations were carried out in a separate room, with only the patient and a companion (if necessary) in the room. The project was approved by the ethical committee of Iran University of Medical Sciences (IR.IUMS.FMD.REC.1397.179).

Statistical analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) software version 22. To describe the quantitative variables, mean and standard deviation (SD) were used, and qualitative variables were reported as percentage and frequency. We used Chi-square test to compare proportions of qualitative variables based on/between different independent groups and we used Fisher's exact test if sample size assumption was not met. We also applied independent t-test and one-way ANOVA for assessment of mean difference in two and more than two categorical variables. A p-value lower than 0.05 was considered to indicate a statistically significant difference.

RESULTS

During the study, 226 cases were admitted to the emergency department. Five patients were discharged against medical advice and eight were discharged by the in-charge physicians before the examination. Thirteen patients did not participate in the study due to lack of consent or uncooperativeness.

A total of 200 patients (143 males, 71.5%) participated in the study. The mean age (±SD) was 36.2±10.8 years (range 14-63 years). The primary diagnoses of the patients were mood disorders (103, 51.5%), psychotic disorders (33, 16.5%), substance abuse disorders (43, 21.5%), personality disorders (11, 5.5%), anxiety disorders including obsessive-compulsive disorder and posttraumatic stress disorder (6, 3.0%), catatonia (6, 3.0%) and developmental disorders including autism spectrum disorder, intellectual disability and attention deficit/hyperactivity disorder (3, 1.5%). The frequency of mood disorder was significantly higher in females than males (63.2% vs 53.1%, p=0.037). But substance abuse disorder was significantly more prevalent in males than females (25.2% vs 12.3%, p=0.045). The incidence of other disorders was not significantly different between two sexes (p>0.05) (Figure 1). The history of mood disorders was positive in 54.0% and was more prevalent than other disorders. The history of different disorders was the same in two sexes (P-value>0.05), although positive history of mood (50.3 vs 49.7) and anxiety disorders (7.0% vs 4.9%) was higher in females than males. History of substance abuse, psychotic, personality and developmental disorders was higher in males compared to females (Figure 1).

The history of substance abuse disorders including opioid abuse disorder was positive in 36 patients [32 males (22.4%) vs 4 female (7.0%), p=0.011], cannabis abuse disorder in 21 patients [20 males (14.0%) vs 1 female (1.8%), p=0.011], stimulant abuse disorder in 30 patients [23 males (16.1%) vs 7 female (12.3%), p=0.497], and alcohol abuse disorder in 7 patients [5 males (3.5%) vs 2 females (3.5%), p=1.0]. Also, 119 patients had a history of smoking, which was more prevalent among males compared to females [71.3% vs 29.8%, p<0.001].

Urine samples for substance abuse assessment are usually tested for recent use of methamphetamine, morphine, amphetamine, and tetrahydro-cannabinol. Frequency of these substances were 13.4%, 12.6%, 12.4%, and 6.5%. Some people (12.9%) had more than one positive test.

One hundred and ten participants (55.0%) had history of at least one physical disease. The history of physical diseases was non-significantly higher in females than in males (61.4% vs 52.4, P=0.250). The orthopedic diseases were the most frequent item in history of physical illnesses and only the hematologic diseases showed a significant

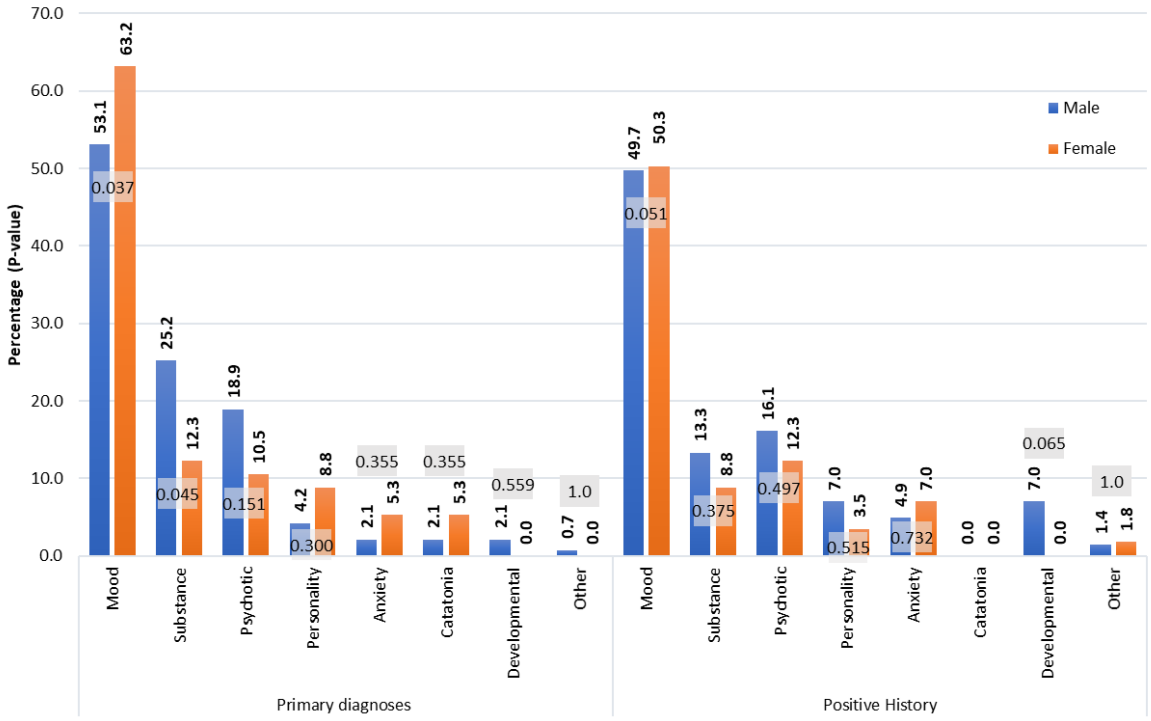

Figure 1: The primary diagnoses and history of disorders in patients admitted to the emergency ward of a psychiatric hospital

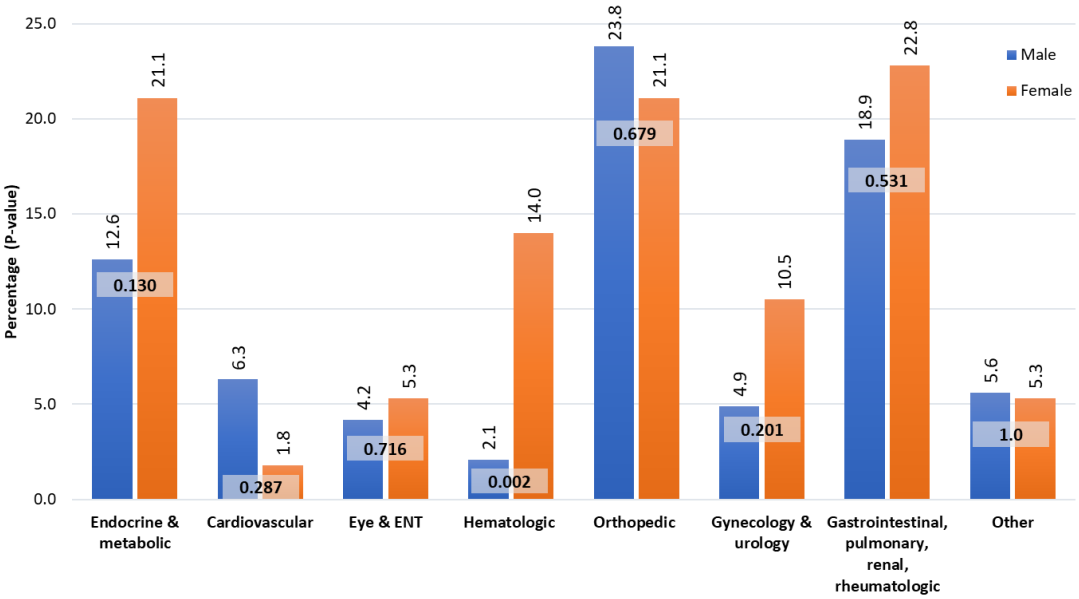

Figure 2: The history of physical diseases in patients admitted to the emergency ward of a psychiatric hospital

difference between sexes (14.0% in females vs 2.1% in males, p=0.002) (Figure 2). Also, 16.0% of patients had positive neurologic history, which was slightly higher in females compared to males (19.3% vs 14.7%, p=0.422). Surprisingly, 99.3% (male: 99% and female: 100%) of the patients had at least one positive finding in physical exam (other than neurologic findings) and 95% (male: 94.8% and female: 95.4%) had at least one positive neurologic problem (excluding the 2nd and 8th cranial nerves).

Neurologic examination

Six patients were drowsy, which was not related to

any medications. We did not exclude these patients from further neurologic examinations, and their test results were reported as abnormal if they were unable to perform the test.

- **Cranial Nerve Examination**

Cranial nerves were examined in 198 patients (Table 1). Excluding optic and vestibulocochlear nerves, 33.2% of the participants had at least one other abnormal finding in cranial nerves. The most common abnormalities in cranial nerves were in visual acuity (44.8% in the right or left eye, 37.0% in both eyes) and then olfactory nerve (26.9% on the left, 24.4% on the right and 21.2% on both sides). The prevalence of visual acuity impairment in women was higher than men and this difference was significant on the left (56.4 vs 40.1, p=0.041) and both sides (49.1% vs 32.1, p=0.028). The mean age of patients with abnormalities in cranial nerves was more than the normal group and this difference was significant for olfactory nerve, visual acuity and whisper test (p<0.05). Regarding the cranial nerves, abnormalities in olfactory nerve was higher among the group of patients with "substance abuse disorder" diagnosis compared to those with other disorders and this difference was statistically significant on the left side (p=0.023). Pupils were examined in 197 cases. We detected myosis in 21 cases (10.7%), and mydriasis in 15 patients (7.6%).

- **Level of consciousness and mental status examination**

Results of mental status and other neurological examinations are shown in table 1. The most frequent abnormal findings included abnormalities in recent memory (68.7%) followed by attention (33.7%), and orientation to time (29.5%) and place (13.0%). The prevalence of abnormality in the level of consciousness and mental status examination showed no significant difference between sexes and disorder groups (p>0.05). However, patients in abnormal group were older than normal group and this difference was significant for drowsiness [mean (SD): 45.5 (11.8) vs 35.9 (10.7), p=0.032] and marginally significant for immediate memory [mean (SD): 43.8 (13.7) vs 35.9 (10.6), p=0.075] (Table 1). Positive palmomental reflex was seen in 68 cases (34.5%) out of 197 cases, and positive grasp reflex was seen in one case (0.5%) out of 198 cases. However, we found no positive snout reflex.

- **Muscle tone, deep tendon reflexes, extrapyramidal system and other neurologic examinations**

More than 10% of the patients had akathisia (41.6%), masked face (14.2%), decreased blinking (13.3%), bradykinesia (11.3%), dysarthria (10.7%) and resting tremor (10.6%). The prevalence of bradykinesia (23.2% vs 6.5%), decreased blinking (22.8% vs 9.4%) and masked face (24.6% vs 10.0%) was significantly higher in females compared to males. The patients with decreased blinking were significantly younger than the rest of the patients [mean (SD): 32.0 (9.0) vs 36.6 (10.8), p=0.043]. The prevalence of bradykinesia, decreased blinking and masked face was significantly higher in the group of patients diagnosed with "psychotic and catatonia" compared to those with other disorders (p<0.001) (Table 1). Abnormal muscle tone (18.5%) was also among the most prevalent neurological findings. Two percent of the patients had asymmetric biceps reflex and 7.2% had asymmetry in knee reflex. The patients with absent left knee jerk, and right and left biceps were significantly younger than the patients with positive reflex (p<0.05) (Table 1).

Non-neurologic examination

- **Abdominal examination**

Forty-two (22.1%) out of 190 patients had at least one abnormal abdominal examination (abdominal tenderness: 10.2%, abnormal percussion: 1.5%, abnormal liver span size: 12.5%). Gastrointestinal signs were significantly more prevalent in patients with history of internal medicine diseases (including pulmonary, gastrointestinal, renal and rheumatologic diseases) compared to patients without this history. Sixteen (40.0%) out of the 40 patients with a history of internal medicine diseases had at least one gastrointestinal sign, and in the 157 patients without such a history, 28 patients (17.8%) had at least one gastrointestinal sign (p=0.003).

- **Cardiac examinations**

Eighteen (9.3%) out of 194 patients had orthostatic hypotension, and three (1.5%) had flushing. Sixty-five (33.0%) out of 197 patients had one or more abnormal cardiac examination including cardiac rhythm (17.2%), cardiac murmur (21.5%), predominant JVP (1.0%) and generalized edema (0.5%). The prevalence of tachycardia and bradycardia was 3.0% and 14.2%, respectively. The prevalence of abnormal cardiac examination was not significantly different between disorder groups (p>0.05).

- **Pulmonary examinations**

Forty-eight cases (24.0%) had at least one pulmonary sign (including clubbing, abnormal pulmonary sounds, abnormal pulmonary expansion, cough, and peripheral or central cyanosis). Among those with a history of internal medicine diseases, 11 (27.5%) cases and among

Table 1: Findings of cranial nerve, mental status, deep tendon reflex and other neurological examinations in study patients (*Other disorders excluding developmental disorders)

Finding	Total	Sex		p	Age		p	Disorder				p
		Male	Female		Normal	Abnormal		Mood & anxiety	Psychotic & catatonia	Personality	Substance & Other*	
	n (%)				mean (SD)			n (%)				
Cranial nerve examination												
Olfactory nerve (n=193)												
Right	47 (24.4)	37 (26.8)	10 (18.2)	0.207	35.3 (10.3)	38.2 (12.0)	0.113	21 (20.8)	7 (19.4)	1 (10.0)	15 (36.6)	0.129
Left	52 (26.9)	40 (29.0)	12 (21.8)	0.311	34.9 (10.0)	39.2 (12.2)	0.027	21 (20.8)	12 (33.3)	0 (0.0)	16 (39.0)	0.023
Both sides	41 (21.2)	32 (23.2)	9 (16.4)	0.295	35.2 (10.2)	39.2 (12.4)	0.064	18 (17.8)	7 (19.4)	0 (0.0)	13 (31.7)	0.099
Visual acuity (n=192)												
Right	86 (44.8)	58 (42.3)	28 (50.9)	0.280	34.1 (9.4)	37.9 (11.8)	0.017	43 (43.4)	19 (52.8)	6 (60.0)	17 (41.5)	0.562
Left	86 (44.8)	55 (40.1)	31 (56.4)	0.041	33.6 (9.7)	38.6 (11.3)	0.002	45 (45.4)	21 (58.3)	3 (30.0)	16 (39.0)	0.256
Both sides	71 (37.0)	44 (32.1)	27 (49.1)	0.028	33.7 (9.5)	39.5 (11.6)	0.001	35 (35.4)	17 (47.2)	3 (30.0)	15 (36.6)	0.594
Oculomotor nerve (n=197)												
Right	0 (0.0)	0 (0.0)	0 (0.0)	-	36.1 (10.8)	-	-	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
Left	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.1 (10.8)	-	-	1 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
Trochlear nerve (n=197)												
Right and/ or Left	0 (0.0)	0 (0.0)	0 (0.0)	-	36.1 (10.8)	-	-	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
Trigeminal nerve (n=198)												
Right	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.2 (10.7)	22.0 (NA)	0.189	1 (1.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
Left	0 (0.0)	0 (0.0)	0 (0.0)	-	36.1 (10.8)	-	-	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
Abducens nerve (n=197)												
Right and/or Left	0 (0.0)	0 (0.0)	0 (0.0)	-	36.1 (10.8)	-	-	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
Facial nerve (n=195)												
Right	2 (1.0)	2 (1.4)	0 (0.0)	0.597	36.1 (10.9)	37.5 (0.71)	0.852	1 (1.0)	0 (0.0)	0 (0.0)	1 (2.4)	1.0
Left	4 (2.1)	4 (2.8)	0 (0.0)	0.335	35.9 (10.7)	44.8 (14.0)	0.105	3 (3.0)	0 (0.0)	0 (0.0)	1 (2.4)	0.852
Both sides	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.1 (10.8)	37.0 (NA)	0.932	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.4)	0.466
Whisper test (n=197)												
Right	8 (4.1)	6 (4.3)	2 (3.6)	1.0	35.7 (10.7)	44.0 (10.0)	0.033	4 (3.9)	2 (5.4)	0 (0.0)	2 (4.8)	0.930
Left	10 (5.1)	6 (4.3)	4 (7.1)	0.474	35.9 (10.7)	39.6 (11.8)	0.289	3 (2.9)	2 (5.4)	1 (10.0)	4 (9.5)	0.241
Both sides	6 (3.0)	5 (3.5)	1 (1.8)	0.677	35.8 (10.6)	46.2 (10.9)	0.019	3 (2.9)	2 (5.4)	0 (0.0)	1 (2.4)	0.806
Glossopharyngeal/Vagus nerves (n=197)												
Right	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.1 (10.8)	40.0 (NA)	0.719	0 (0.0)	1 (2.7)	0 (0.0)	0 (0.0)	0.246
Left	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.1 (10.8)	40.0 (NA)	0.719	0 (0.0)	1 (2.7)	0 (0.0)	0 (0.0)	0.246
Spinal accessory nerve (n=196)												
Right	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.1 (10.8)	40.0 (NA)	0.719	0 (0.0)	1 (2.7)	0 (0.0)	0 (0.0)	0.246
Left	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.1 (10.8)	40.0 (NA)	0.719	0 (0.0)	1 (2.7)	0 (0.0)	0 (0.0)	0.246

Table 1 (in continue): Findings of cranial nerve, mental status, deep tendon reflex and other neurological examinations in the study patients

Finding	Total	Sex		p	Age		p	Disorder				p
		Male	Female		Normal	Abnormal		Mood & anxiety	Psychotic & catatonia	Personality	Substance & Other*	
	n (%)				mean (SD)			n (%)				
Hypoglossal nerve (n=196)												
Right	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.0 (10.7)	40.0 (NA)	0.710	0 (0.0)	1 (2.7)	0 (0.0)	0 (0.0)	0.247
Left	3 (1.5)	3 (2.2)	0 (0.0)	0.558	35.9 (10.7)	40.3 (12.5)	0.482	0 (0.0)	3 (8.1)	0 (0.0)	0 (0.0)	0.246
Both sides	1 (0.5)	1 (0.7)	0 (0.0)	1.0	36.0 (10.7)	40.0 (NA)	0.710	0 (0.0)	1 (2.7)	0 (0.0)	0 (0.0)	0.247
Drowsy consciousness (n=200)	6 (3.0)	3 (2.1)	3 (5.3)	0.355	35.9 (10.7)	45.5 (11.8)	0.032	5 (4.9)	0 (0.0)	0 (0.0)	1 (2.4)	0.672
Immediate memory (n=195): <3 of 3-word recall	6 (3.1)	5 (3.6)	1 (1.8)	0.678	35.9 (10.6)	43.8 (13.7)	0.075	4 (4.0)	2 (5.6)	0 (0.0)	0 (0.0)	0.518
Recent memory (n=195): <3 of 3-word recall	134 (68.7)	95 (67.9)	39 (70.9)	0.679	34.8 (10.3)	36.7 (11.0)	0.238	69 (68.3)	25 (69.4)	6 (60.0)	28 (66.7)	0.948
Impaired Attention (n=190)	64 (33.7)	45 (32.8)	19 (35.8)	0.695	35.7 (10.8)	37.4 (10.9)	0.308	33 (33.0)	12 (34.3)	1 (10.0)	16 (40.0)	0.374
Time orientation (n=193): <5	57 (29.5)	20 (14.5)	6 (10.9)	0.510	35.4 (10.3)	37.7 (12.0)	0.182	12 (12.0)	5 (14.3)	0 (0.0)	5 (11.9)	0.841
Place orientation (n=193): <5	25 (13.0)	17 (12.4)	8 (14.5)	0.813	35.9 (10.2)	37.8 (14.8)	0.533	14 (14.0)	4 (11.8)	2 (20.0)	3 (7.1)	0.536
Presence of or Impaired ...												
Dysarthria (n=197)	21 (10.7)	13 (9.3)	8 (14.0)	0.327	35.9 (10.4)	39.8 (13.7)	0.213	12 (11.8)	3 (7.9)	0 (0.0)	2 (4.9)	0.559
Hypokinesia (n=194)	14 (7.2)	7 (5.1)	7 (12.5)	0.121	35.6 (10.6)	40.6 (12.3)	0.091	5 (5.0)	5 (13.9)	0 (0.0)	4 (9.8)	0.261
Bradykinesia (n=194)	22 (11.3)	9 (6.5)	13 (23.2)	0.001	35.9 (10.9)	36.1 (9.7)	0.953	7 (6.9)	9 (25.0)	0 (0.0)	5 (12.2)	0.029
Rigidity (n=198)	7 (3.5)	3 (2.1)	4 (7.1)	0.101	36.2 (11.0)	34.4 (6.8)	0.670	3 (2.9)	4 (10.8)	0 (0.0)	0 (0.0)	0.087
Decrease blinking (n=196)	26 (13.3)	13 (9.4)	13 (22.8)	0.012	36.6 (10.8)	32.0 (9.0)	0.043	7 (6.9)	10 (27.0)	2 (20.0)	6 (14.3)	0.014
Masked face (n=197)	28 (14.2)	14 (10.0)	14 (24.6)	0.008	36.5 (10.8)	32.7 (9.4)	0.085	8 (7.9)	11 (28.9)	2 (20.0)	6 (14.3)	0.016
Resting tremor (n=198)	21 (10.6)	13 (9.2)	8 (14.3)	0.291	35.8 (10.9)	39.7 (10.4)	0.131	12 (11.7)	5 (13.5)	1 (10.0)	3 (7.1)	0.819
Dystonia (n=199)	2 (1.0)	2 (1.4)	0 (0.0)	1.0	36.2 (10.8)	39.5 (21.9)	0.665	1 (1.0)	0 (0.0)	1 (10.0)	0 (0.0)	0.186
Akathisia (n=197)	82 (41.6)	60 (42.6)	22 (39.3)	0.675	36.8 (11.2)	35.1 (10.1)	0.285	41 (40.2)	13 (35.1)	4 (40.0)	19 (45.2)	0.841
Heel to shin (n=189)	17 (9.0)	9 (6.7)	8 (14.8)	0.093	35.5 (10.7)	38.3 (10.6)	0.300	8 (8.2)	2 (5.7)	0 (0.0)	4 (9.8)	0.910
Finger to nose (n=193)	2 (1.0)	1 (0.7)	1 (1.8)	1.0	35.8 (10.7)	48.5 (12.0)	0.098	0 (0.0)	1 (2.9)	0 (0.0)	1 (2.4)	0.268
Left plantar reflex (n=196)												
Upward	3 (1.5)	2 (1.4)	1 (1.8)	1.0	44.3 (11.4)		0.315	2 (2.0)	1 (2.8)	0 (0.0)	0 (0.0)	0.849
Downward	186 (94.9)	134 (95.0)	52 (94.5)		35.8 (10.9)			97 (95.1)	33 (91.7)	10 (100)	40 (95.2)	
Neutral	7 (3.6)	5 (3.5)	2 (3.6)		39.0 (10.9)			3 (2.9)	2 (5.9)	0 (0.0)	2 (4.8)	

Table 1 (in continue): Findings of cranial nerve, mental status, deep tendon reflex and other neurological examinations in the study patients

Finding	Total	Sex		p	Age		p	Disorder				p
		Male	Female		Normal	Abnormal		Mood & anxiety	Psychotic & catatonia	Personality	Substance & Other*	
	n (%)				mean (SD)			n (%)				
Right plantar reflex (n=195)												
Upward	4 (2.1)	2 (1.4)	2 (3.6)		36.8 (17.8)			3 (3.0)	1 (2.8)	0 (0.0)	0 (0.0)	
Downward	183 (93.8)	132 (94.3)	51 (92.7)	0.766	36.0 (10.8)		0.942	95 (94.1)	32 (88.9)	10 (100)	40 (95.2)	0.702
Neutral	8 (4.1)	6 (4.3)	2 (3.6)		37.3 (11.2)			3 (3.0)	3 (8.3)	0 (0.0)	2 (4.8)	
Deep tendon reflex examination												
Right knee jerk (n=193)												
Absent	8 (4.1)	5 (3.6)	3 (5.5)		28.9 (12.8)			3 (3.0)	2 (5.6)	0 (0.0)	3 (7.3)	
+	56 (29)	41 (29.7)	15 (27.3)	0.451	34.4 (9.9)		0.117	30 (30.0)	9 (25.0)	4 (40.0)	11 (26.8)	0.822
++	118 (61.1)	82 (59.4)	36 (65.5)		37.1 (10.8)			61 (61.0)	21 (58.3)	6 (60.0)	26 (63.4)	
+++	11 (5.7)	10 (7.2)	1 (1.8)		36.3 (12.2)			6 (6.0)	4 (11.1)	0 (0.0)	1 (2.4)	
Left knee jerk (n=192)												
Absent	9 (4.7)	6 (4.4)	3 (5.5)		28.1 (11.8)			3 (3.0)	2 (5.6)	0 (0.0)	4 (9.8)	
+	61 (31.8)	45 (32.8)	16 (29.1)	0.364	34.5 (10.0)		0.050	32 (32.3)	10 (27.8)	5 (50.0)	12 (29.3)	0.658
++	110 (57.3)	75 (54.7)	35 (63.6)		37.0 (10.8)			57 (57.6)	20 (55.6)	5 (50.0)	24 (58.5)	
+++	12 (6.0)	11 (8.0)	1 (1.8)		39.0 (11.7)			7 (7.1)	4 (11.1)	0 (0.0)	1 (2.4)	
Right biceps (n=198)												
Absent	6 (3.0)	5 (3.5)	1 (1.8)		28.0 (8.2)			5 (4.9)	0 (0.0)	0 (0.0)	1 (2.4)	
+	70 (35.4)	53 (37.3)	17 (30.4)	0.733	33.1 (8.9)		<0.001	29 (28.2)	12 (32.4)	5 (50.0)	20 (47.6)	0.360
++	116 (58.6)	80 (56.3)	36 (64.3)		37.9 (11.2)			5 (4.9)	0 (0.0)	0 (0.0)	1 (2.4)	
+++	6 (3.0)	4 (2.8)	2 (3.6)		48.2 (11.8)			5 (4.9)	0 (0.0)	0 (0.0)	1 (2.4)	
Left biceps (n=198)												
Absent	5 (2.5)	4 (2.8)	1 (1.8)		29.8 (11.7)			3 (2.9)	0 (0.0)	0 (0.0)	0 (0.0)	
+	69 (34.8)	52 (36.6)	17 (30.4)	0.768	32.4 (8.3)		<0.001	28 (27.2)	13 (35.1)	5 (50.0)	21 (50.0)	0.245
++	118 (59.6)	82 (57.7)	36 (64.3)		38.0 (11.2)			67 (65.0)	24 (64.9)	5 (50.0)	20 (47.6)	
+++	6 (6.0)	4 (2.8)	2 (3.6)		48.2 (11.8)			5 (4.9)	0 (0.0)	0 (0.0)	1 (2.4)	

patients without this history, 37 (23.1%) cases had at least one pulmonary sign (p=0.562).

- **Skin examination**

The findings of skin examination are reported in table 2. Of all the patients, 41.7% had at least one acute skin damage. Among acute skin symptoms, 38 cases of ecchymosis (19.1%), forty-three skin ulcers (21.6%), and 20 cases of abrasion (10.1%) were reported. The frequency of ecchymosis cases in females was significantly higher than that of males (33.3% vs 13.4%, p=0.001).

In addition, prevalence of ecchymosis was higher in personality (30.0%) and mood and anxiety disorder patients (25.5%) compared to those with other disorders (p=0.032). The prevalence of abrasion was higher in personality (40.0%) and "substance and other" disorder patients (38.1%) compared to those in other groups (p=0.004)

Table 2: Symptoms found in skin examination of the study patients

Finding	Total	Sex		p	Disorder				p
		Male	Female		Mood & anxiety	Psychotic & catatonia	Personality	Substance & Other*	
	n (%)				n (%)				
Acute skin damage (n=199)									
Ecchymosis	38 (19.1)	19 (13.4)	19 (33.3)	0.001	26 (25.5)	7 (17.9)	3 (30.0)	2 (4.8)	0.032
Wound	43 (21.6)	13 (9.2)	7 (12.3)	0.507	10 (9.8)	4 (10.3)	2 (20.0)	4 (9.5)	0.696
Abrasion	20 (10.1)	34 (23.9)	9 (15.8)	0.206	14 (13.7)	6 (15.4)	4 (40.0)	16 (38.1)	0.004
At least one of the above	83 (41.7)	58 (40.8)	26 (45.6)	0.538	41 (40.2)	13 (33.3)	7 (70.0)	20 (47.6)	0.164
Conjunctiva, pallor (n=198)	28 (14.1)	14 (9.9)	14 (25.0)	0.006	12 (11.9)	5 (12.8)	2 (20.0)	7 (16.7)	0.811
Scar or rash (n=200)	124 (62.0)	91 (63.6)	33 (57.9)	0.519	59 (57.3)	21 (53.8)	8 (80.0)	31 (73.8)	0.119
Icterus (n=200)	7 (3.5)	6 (4.2)	1 (1.8)	0.676	3 (2.9)	3 (7.7)	0 (0.0)	1 (2.4)	0.582
Tattoos (n=198)	60 (30.3)	47 (33.3)	13 (22.8)	0.144	20 (19.6)	12 (30.8)	5 (50.0)	20 (48.8)	0.003
Palmar erythema (n=199)	4 (2.0)	3 (2.1)	1 (1.8)	1.0	1 (1.0)	1 (2.6)	1 (10.0)	1 (2.4)	0.151
Cyanosis (n=197)									
Central	3 (1.5)	2 (1.4)	1 (1.8)	1.0	2 (2.0)	1 (2.6)	0 (0.0)	0 (0.0)	0.815
Peripheral	0 (0.0)	0 (0.0)	0 (0.0)	-	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
Venous Injection site (n=191)	83 (43.5)	82 (60.3)	26 (47.3)	0.100	47 (48.0)	14 (36.8)	5 (50.0)	14 (35.9)	0.464
Palmar Sweater (n=199)	44 (22.1)	31 (21.8)	13 (22.8)	0.881	24 (23.3)	13 (33.3)	1 (10.0)	6 (14.6)	0.175
Lymphadenopathy [a] (n=196)	7 (3.6)	5 (3.5)	2 (3.7)	1.0	5 (5.0)	0 (0.0)	0 (0.0)	2 (4.8)	0.663
Edema [b] (n=199)									
Generalized	1 (0.5)	1 (0.7)	0 (0.0)	1.0	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.4)	1.0
Extremities	14 (7.0)	7 (4.9)	7 (12.5)	0.070	11 (10.7)	1 (2.6)	0 (0.0)	2 (4.8)	0.375

* Other disorders excluding developmental disorders; a. Six cervical cases and one axillary case; b. All cases had pitting edema; 6 cases were unilateral, and 8 cases were on both sides

(Table 2). We detected pale conjunctiva in 28 cases (14.1%), which was significantly more prevalent in females compared to males (25.0% vs 9.9%, p=0.006).

Overall, 30.3% of the patients had tattoos and, although there was no significant difference between sexes, the prevalence of tattoos in patients in the "substance and other" disorder group (48.8%) was significantly higher than those with other kinds of disorders (p=0.003). Out of 197 patients, 159 (80.7%) had at least one abnormality in skin examination (acute skin damage, scar, rash, tattoo).

Paraclinical findings

- **Electrocardiogram**

Based on electrocardiograms, 14.0% of patient had irregular rhythm, 51 (31.9%) patients had changes in T wave. The most prevalent T wave change was biphasic T wave, which was observed in 25.5% of the patients with T wave change. The prevalence of irregular rhythm and also biphasic T wave was significantly higher in those with personality disorder (44.4%) compared to patients with other disorders (p<0.05) (Table 3). ST changes were seen in 5 patients (3.0%) and abnormal PR was seen in

Table 3: Electrocardiogram and cardiac examination findings in the study patients

Finding	Total	Disorder				p
		Mood & anxiety	Psychotic & catatonia	Personality	Substance & Other*	
	n (%)					
Irregular rhythm (n=164)	23 (14.0)	7 (8.6)	3 (9.1)	4 (44.4)	8 (22.2)	0.014
P wave changes (n=141)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
T wave changes (n=165)						
Tall T wave	1 (0.6)	1 (1.2)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
T wave inversion	20 (12.1)	6 (7.3)	6 (18.8)	1 (11.1)	7 (19.4)	0.144
Biphasic T wave	42 (25.5)	13 (15.9)	8 (25.0)	4 (44.4)	13 (36.1)	0.046
Flat T wave	7 (4.2)	5 (6.1)	1 (3.1)	1 (11.1)	0 (0.0)	0.246
Any change in T wave	51 (31.9)	19 (23.2)	10 (31.3)	4 (44.4)	14 (38.9)	0.249
ST changes (n=167)						
Elevation	4 (2.4)	1 (1.2)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
Depression	1 (0.6)	1 (1.2)	1 (3.0)	1 (11.1)	1 (2.8)	0.197
QRS changes, widening (n=167)	1 (0.6)	1 (1.2)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
PR interval changes (n=166)						
<0.12	1 (0.6)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.8)	1.0
>0.20	10 (6.0)	9 (10.7)	0 (0.0)	0 (0.0)	1 (2.8)	0.140
Heart axis (n=167)						
Right deviation	4 (2.4)	2 (2.4)	1 (3.0)	0 (0.0)	1 (2.8)	1.0
Left deviation	3 (1.8)	3 (3.6)	0 (0.0)	0 (0.0)	0 (0.0)	0.511
QTc changes (n=166)						
0.4-0.44	71 (42.8)	39 (47.0)	13 (39.4)	1 (11.1)	16 (44.4)	0.214
≥0.45	13 (7.8)	9 (10.8)	2 (6.1)	0 (0.0)	2 (5.6)	0.722
Cardiac rhythm (n=197)						
Tachycardia	6 (3.0)	2 (2.0)	3 (8.1)	0 (0.0)	1 (2.4)	0.334
Bradycardia	28 (14.2)	14 (13.7)	9 (24.3)	0 (0.0)	5 (11.9)	0.187
Cardiac murmur (n=195)						
Certain	25 (12.8)	12 (11.9)	9 (25.0)	0 (0.0)	4 (9.5)	0.129
Suspected	17 (8.7)	12 (11.9)	3 (8.3)	0 (0.0)	2 (4.8)	0.562
Predominant JVP (n=197)	2 (1.0)	0 (0.0)	1 (2.6)	0 (0.0)	1 (2.4)	0.274

* Other disorders excluding developmental disorders; JVP: Jugular venous pressure.

11 patients (6.6%). Abnormal QTc (≥0.45) was observed in 7.8% of patients, and its prevalence was not significantly different between disorder groups (p=0.722) (Table 3). Mean QTC was measured in 166 patients with a mean±SD of 0.40±0.08 sec. This mean was 0.40±0.07 in males (n=118) and 0.41±0.01 in females (n=48) (p= 0.442). Also, this mean was not significantly different between disorder groups (p=0.277).

- **Cell blood count and biochemical test findings**

In complete blood count (CBC) Test, 2 cases (1.0%) had leukopenia, and 13 cases (6.5%) had leukocytosis. The prevalence of leukocytosis in substance abuse disorder group was significantly higher than other disorder groups (19% vs <6.0%, p=0.010). Hemoglobin was found to be less than 10 mg/dL in 2 cases and was less than 12 mg/dL in 11.5% of patients. High triglyceride (>200 mg/dl) was observed in 11.9% of patients. Additionally, 31.7% of the patients had abnormal fasting blood sugar (FBS≥100 mg/dl). Biochemistry and blood electrolyte tests results were not significantly different between various disorder groups (p>0.05) (Table 4).

Comparison of examinations with Interns' examinations

Physical examinations that had at least one abnormal finding in interns' examination were scar, tattoo, conjunctiva, acute skin damage, pulmonary sounds, abdominal tenderness, cardiac rhythm and pupils. Other examinations hadn't been performed or were reported as normal. Eight individuals didn't have an examination report. In our study, scar, tattoo, acute skin damage, pale conjunctiva and abdominal tenderness were reported in 55.5%, 30.3%, 41.7%, 14.1% and 10% of the subjects, respectively. Whereas these findings in interns' examinations were reported in

Table 4: Findings of complete blood count and biochemical tests in the study patients

Finding		Total	Disorder				p
			Mood & anxiety	Psychotic & catatonia	Personality	Substance & Other*	
		n (%)					
Cell blood count (n=199)							
WBC (µL)	Leukopenia [a]	2 (1.0)	0 (0.0)	1 (2.6)	0 (0.0)	1 (2.4)	0.274
	Leukocytosis [b]	13 (6.5)	3 (2.9)	2 (5.3)	0 (0.0)	8 (19.0)	0.010
Hemoglobin (g/dl)	Hemoglobin <12	23 (11.5)	14 (13.6)	3 (7.9)	2 (20.0)	3 (7.1)	0.455
	Hemoglobin >16	25 (12.5)	10 (9.7)	8 (21.1)	1 (10.0)	3 (7.1)	0.211
MCV (fl)(n=197)	<80	8 (4.0)	6 (5.9)	0 (0.0)	0 (0.0)	2 (4.9)	0.497
	>100	2 (1.0)	2 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
Platelet (µL)	<100000	2 (1.0)	2 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
	100000-150000	17 (8.5)	9 (8.7)	5 (13.2)	0 (0.0)	3 (7.1)	0.677
	>450000	0 (0.0)	2 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
Biochemistry and blood electrolytes							
Na (mEq/L) (n=197)	<135	4 (2.0)	4 (3.9)	2 (2.0)	0 (0.0)	0 (0.0)	0.598
	>145	28 (14.0)	17 (16.7)	4 (10.5)	2 (20.0)	4 (9.8)	0.598
K (mEq/L) (n=197)	<3.5	4 (2.0)	3 (2.9)	0 (0.0)	0 (0.0)	1 (2.4)	0.851
	>5.5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
Cr (mg/dl) (n=193)	<0.5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
	>1.5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
AST (IU/L) (n=195)	<30	140 (71.7)	74 (72.5)	29 (78.4)	7 (77.8)	27 (65.9)	0.643
	>100	3 (1.5)	1 (1.0)	0 (0.0)	0 (0.0)	2 (4.9)	0.342
ALT (IU/L) (n=195)	<30	149 (76.4)	76 (74.5)	32 (86.5)	6 (66.7)	32 (78.0)	0.420
	>100	4 (2.0)	2 (2.0)	0 (0.0)	0 (0.0)	2 (4.9)	0.506
Alkaline phosphatase(n=193)	<44	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
	>306	4 (2.0)	2 (2.0)	0 (0.0)	0 (0.0)	2 (5.1)	0.499
Cholesterol (IU/L) (n=194)	200-240	43 (22.9)	25 (25.3)	7 (18.9)	2 (20.0)	9 (21.4)	0.863
	>240	12 (6.0)	6 (6.1)	3 (8.1)	0 (0.0)	2 (4.8)	0.911
LDL (mg/dl) (n=191)	150-200	5 (2.5)	2 (2.1)	1 (2.7)	0 (0.0)	2 (4.9)	0.786
	>200	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	-
HDL (mg/dl) (n=191)	<30	2 (1.0)	2 (2.1)	0 (0.0)	0 (0.0)	0 (0.0)	1.0
	>60	20 (10.4)	12 (12.4)	2 (5.4)	0 (0.0)	5 (12.2)	0.564
Triglyceride (mg/dl) (n=196)	200-400	19 (9.5)	11 (10.8)	5 (13.5)	0 (0.0)	3 (7.1)	0.715
	>400	4 (2.0)	1 (1.0)	0 (0.0)	1 (11.1)	2 (4.8)	0.080
TSH (µIU/ml) (n=140)	<0.5	13 (9.2)	5 (7.5)	1 (3.4)	0 (0.0)	5 (15.6)	0.356
	>5	8 (5.7)	5 (7.5)	1 (3.4)	1 (14.3)	1 (3.1)	0.499
FBS (mg/dl) (n=192)	<100	143 (74.5)	78 (78.8)	26 (70.3)	8 (88.9)	28 (68.3)	0.373
	100-125	35 (18.2)	15 (15.2)	7 (18.9)	1 (11.1)	10 (24.4)	0.572
	>125	14 (7.2)	6 (6.1)	4 (10.8)	0 (0.0)	3 (7.3)	0.680

* Other disorders excluding developmental disorders; WBC: white blood cell count; a: Leukopenia as WBC=less than 3500; b. Leukocytosis as WBC=over 10,000; MCV: mean corpuscular volume; AST: Aspartate transaminase; ALT: Alanine transaminase; FBS: Fasting blood sugar; LDL: Low-density lipoprotein; HDL: High-density lipoprotein; TSH: Thyroid Stimulating Hormone.

18.5%, 4.5%, 11%, 3,5% and 1.5% of the patients, respectively. We found 9 patients with abnormal pulmonary sounds but interns had only reported 2 cases with such abnormalities. abnormal heart sounds and neurological findings reported in interns' reports.

Discussion

Based on the examinations and according to the frequency of findings, it seems that tests such as cranial nerve examination (especially cranial nerve I), and evaluation of recent memory, attention, orientation to time and place, hypokinetic movements, akathisia, muscle tone, deep tendon reflexes, size of pupils, heart sounds, abdominal tenderness, liver size, and skin examination should not be neglected. On the other hand, abnormal findings are rare in other examinations like spleen size, hyperkinetic movements, finger to nose test, JVP size and abdominal percussion, and they could be overlooked in a busy emergency department, and should only be performed in case of clinical

suspicion. We also suppose that due to the high frequency of positive palmomental reflex in the absence of other primary reflexes, this isolated finding might lack clinical importance. In our study, the prevalence of visual acuity impairment was higher in females compared to men, especially on the left side and on both sides. The patients with abnormalities in olfactory nerve, visual acuity and whisper test were older than the normal group. We also found that abnormalities in olfactory nerve was higher in patients with substance abuse disorder compared to other disorders. The most common method for substance abuse in Iran is through smoking. Therefore, smoking itself might have contributed to impairment of olfaction, as we know the most common reasons for anosmia are peripheral causes including sinonasal diseases, infections, and trauma (19). Some articles have shown abnormality in function and structure of the olfactory nerve in patients with acute major depression (20). However, we did not replicate this finding; maybe because of the small number of patients with depression in this study. Scar and rash were found in 55.5% and 17% of the cases, respectively. The prevalence of ecchymosis in females was significantly higher than males. This finding might show that female patients are more frequently beaten when they develop disorders. Ecchymosis and abrasion were more frequently observed in those with personality disorder compared to patients with other disorders. This might show that patients with personality disorders more frequently engage in physical fights and self-injurious behavior. 30.3% of patients had tattoos, the rate of which was higher among those in the "substance and other" disorder group compared to those with other disorders. Foster et al. studied patients with delusional infestation between 2001 and 2007 (retrospective study). The most common findings on physical examination were excoriations (92 patients), erythema (47 patients), scars (39 patients), papules (29 patients), and post-inflammatory hyperpigmentation (24 patients) (21). 41.7% of the subjects had at least one acute skin damage, which shows the importance of paying attention to skin condition of the admitted patients. Many of these acute conditions may need further investigation or treatment. Furthermore, ignoring bruises and ecchymoses in the initial exam could have legal consequences, because it could be claimed that they have been induced during admission and as a result of staff behavior. In this study, 7.8% of patients had long QTc and 31.9% had variations in T wave and 16% had arrhythmia. ST changes were seen in 5 patients (3.0%) and abnormal PR was seen in 11 patients (6.6%). In a study by Yakasai et al. (22) ECG abnormalities were investigated in psychiatric patients, who were admitted to a hospital between April to May 2017. They found short PR in 3.7% and prolonged PR in 5% of the subjects. In addition, 5% of the patients had long QTc and the same result was found for ST elevation; but 2.5% had ST depression. In their study, PR and QT were significantly ($p<0.05$) lower in females compared to males, while corrected QT was significantly ($p<0.05$) lower in males compared to females; but in our study, there was no significant difference between males and females in this regard. We found that irregular rhythm and biphasic T wave were more common in personality disorder compared to other disorders, but Yakasai didn't report such results. As a result, although time-consuming and costly, we recommend to obtain an ECG from all of the patients who are admitted to the emergency department with a special emphasis on measurement of QTc interval. In this study bradykinesia, decreased blinking and masked face were significantly more prevalent in females compared to males and their prevalence in "psychotic and catatonia" diagnosis patient group was significantly higher than other disorder groups ($p<0.001$). Patients with decreased blinking were significantly younger than the normal group. In their systematic review in 2017, Peralta and Cuesta evaluated motor abnormalities in different groups of psychiatric disorders. In their article, the prevalence of spontaneous dyskinesia was 9%-13% in schizophrenic patients, and the rate was 17%-25% for spontaneous Parkinsonism and 30% for extrapyramidal symptoms (EPS).

The prevalence of spontaneous dyskinesia was 14.3% in bipolar disorder and 6.3% in major depression. The rate of parkinsonism in depression was reported as 20%, which correlated with older age, severity, and cognitive impairment (23). In our study, 77 patients had at least one impaired item in CBC test (38.5%), which was different from the results of Ferguson who reported 6.7% abnormal complete blood count test results in the newly admitted patients with a history of physical illness (24). On the other hand, in a study by Crede, which evaluated routine tests in psychiatric patients referred to emergency department in 2011, white blood cell count was abnormal in 9.1% of subjects (25), which is in line with our finding of 7.5%. Furthermore, leukocytosis was more prevalent in the patients with substance abuse disorder compared to patients with other disorders.

Richards, et al. have shown that amphetamine abuse correlates with leukocytosis (26) and stimulants were the most common positive finding in urine samples of the patients.

Abnormal Thyroid Stimulating Hormone (TSH) was seen in 14.8% of cases in this study, only one case had a combination of low TSH and low T3, and in the remaining cases, T3 and T4 were normal. In the study of Crede, the results were approximately the same, and in cases that TSH was abnormal, FT3 and FT4 were normal (25).

Contrary to the results of our study and Crede, in the Ferguson study, 18.9% of subjects had thyroid function disorders (24). Many psychiatric drugs have hepatic excretion, and some require further follow-up of liver function. High liver transaminase level was found in 2.5% of the subjects, while the frequency in the Ferguson study was almost twice as high and reported as 31.2% (24). The difference between the findings of this study with Ferguson's study might be due to their different patient populations. The center of our study was a specialized psychiatric hospital that generally does not admit patients with frank or complicated medical diseases. This might have resulted in a lower frequency of abnormal lab findings in this study.

Metabolic syndrome is one of the side-effects of psychiatric drugs, especially second-generation antipsychotics, and one of its characteristics is a disturbance in the lipid profile. In this study, about 70 (35%) cases had at least one disrupted item in the lipid profile. In the study by Hsu et al., the incidence of hyperlipidemia in patients with bipolar disorder was investigated in 2005, and then a cohort study was conducted between 2006 and 2010 (to determine the incidence of new cases of hyperlipidemia).

The prevalence of hyperlipidemia in this group of patients was 13.5% in 2005, which was higher than the general population (27). Type 2 diabetes is a common illness in psychiatric patients, which, due to its chronic nature, requires special attention and long-term treatment.

On the other hand, insulin resistance and elevated blood glucose can be a side effect of psychiatric drugs, and all physicians, especially psychiatrists, should be alert to its diagnosis and treatment. In this study, %18.2 of the patients were pre-diabetic, and %7.2 had a fasting blood glucose greater than 126 mg/dL.

In a cross-sectional study in 2017, Alosaimi et al., evaluated the prevalence of metabolic syndrome and its components in psychiatric patients. A total of 41.2% of subjects had metabolic syndrome, and high FBS levels were reported in 47.8% of cases. It should be noted that in the metabolic syndrome, fasting blood sugar above 100 mg/dL is considered a diagnostic criterion (28). One reason for the lower frequency of abnormal metabolic profile in the current study might be the fact that geriatric patients are not generally admitted in Iran Psychiatric Hospital.

Limitations

This study, like all other studies, has some limitations. One limitation of the study is the hospital's specialty for psychiatric patients. For this reason, patients and companions as well as ambulances usually refer to other psychiatric centers that have access to general medical facilities, if the patients have a history of comorbid diseases or other medical problems.

On the other hand, due to the lack of 24-hour access to diagnostic facilities and other specialists, the residents immediately refer patients who initially have a severe physical illness (simultaneously or before psychiatric symptoms) to other centers before admission. Regarding cranial nerve II examination, it should be noted that in this study visual acuity was only evaluated using the Snellen chart, and this alone could not reflect the function of this nerve. Of course, since refractive eye errors could distort the evaluation, patients who wore glasses were examined with glasses. Fundoscopy was excluded from the examination list due to the conditions of the emergency psychiatric patients and the probability of injury to the examiner.

CONCLUSIONS

The majority of the patients admitted to the ED were diagnosed with a mood disorder. Nearly all of the admitted patients had at least one positive finding in the physical and neurological examination, most of which would remain unidentified in the routine examinations. Therefore, more emphasis should be placed on the examination of olfactory nerve (especially in patients with substance abuse disorder), cognition (especially in older adults), extrapyramidal system, heart, abdomen and skin (especially in patients with personality disorder) during the first week of admission in a psychiatric emergency setting.

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