

## CLINICAL STUDY

# Comparison of history of adolescents with substance-induced psychosis, early onset schizophrenia and substance use disorders

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**Abstract:** *Objective:* The contribution contains a comparison of the history data of adolescent patients hospitalized at the Department of Child Psychiatry, Children's Faculty Hospital in Bratislava with the diagnoses of Substance-Induced Psychosis (SIP), Early Onset Schizophrenia (EOS) and with Substance Use Disorders (SUD). *Background:* SIP is rarely recorded and little documented by the age of 18. The etiology of this disorder is still relatively unclear.

*Methods:* The data collection was carried out from patients hospitalized between January 1, 2001 and December 31, 2012. We recorded data from 20 patients hospitalized with SIP, 50 patients hospitalized with EOS, and 50 patients hospitalized with SUD. We collected and compared the data on family history, perinatal complications, early psychomotor development, data on psychical problems before their hospitalization, and presence of unfavorable life situations in their childhood.

*Conclusion:* The data of adolescents with SIP are more similar to the data of patients with EOS than patients with SUD in terms of the burden of family history, the frequency of complications during pregnancy and delivery, and the frequency of the subsequent early psychomotor impairment. In terms of unfavorable life situations and psychological problems for which they were monitored in a psychiatric ward before their hospitalization with SIP, their data are more similar to those of patients with SUD than with EOS (Tab. 3, Fig. 1, Ref. 21). Text in PDF [www.elis.sk](http://www.elis.sk).

**Key words:** adolescent, substance-related disorders, psychoactive drugs, substance-induced psychosis, early onset schizophrenia.

Due to the availability and extensive usage of psychoactive drugs by children and adolescents, patients with Substance-Induced Psychosis (SIP) diagnosis are more frequently in this age category. It is problematic to establish precise diagnosis in the first psychosis phase with simultaneous psychoactive drugs usage. At the same time, older age gradually increases the percentage of patients with psychosis using psychoactive substances (1). The diagnostic problem also occurs in case of longer psychosis duration with simultaneous, regular, or sporadic drug usage (2). In a more broad understanding of the disorders related to drug abuse and psychoses, particularly the following three possibilities with similar clinical pictures are further discussed besides substance-induced psychosis: substance-induced schizophrenia (3),(4), primary schizophrenia with secondary psychoactive drugs abuse, and schizophrenia and psychoactive drugs abuse as two parallel disorders (5). Some authors believe that all three are possible (6). For example D'Souza (7) assumes the existence of exogenous as

well as endogenous types of cannabis psychoses. Whether SIP occurs or typical schizophrenic psychosis starts, is decided by the level of the occurrence of schizotypal and schizoid features of the affected individuals and their families. The greater schizoidity of the affected and their families the longer the psychosis lasts, and the more it has schizophrenic characteristics. André (8) characterizes SIP as a separate group corresponding to schizophrenia only partially and for a certain specific time. According to Tucker (9), it can also be perceived as an intermediate level before possible development of long-term psychotic disorder.

There is no difference between the clinical manifestations of SIP of adolescents and adults (10). The picture of SIP can significantly vary in relation to used psychoactive substances and premorbid personality of a the patient. Remschmidt (11) points out that the differentiation from schizophrenia can often be problematic, and it cannot be authentically recognized solely on the grounds of clinical pictures. Individual psychoactive substances can have their own specific manifestation in clinical pictures (12),(13). However, it is equally true that a particular type of psychoactive substance cannot be unambiguously specified on the grounds of a clinical picture itself. It can only be found on the grounds of toxicological examination (8). Acute development with rich productive positive symptomatology, quite fast diminishing of symptomatology, after the given drug discontinuation and quite good reaction to treatment are

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typical of substance-induced psychosis (14). The drug cannot precipitate negative symptoms as extensively as the positive ones (15). The clinical picture of substance-induced psychosis in children and adolescents can also include catatonia (16). It can generally be assumed that substance-induced psychoses are usually of short, several-day durations, and are unlikely to remain clinically relevant for more than one month after complete cessation of use (17).

## Objective

The objective of the work is to compare history data of adolescent patients hospitalized at the Department of Child Psychiatry (DCP) of the Children's Faculty Hospital in Bratislava with the Substance-Induced Psychosis diagnosis to history data of adolescents hospitalized with Early Onset Schizophrenia (EOS) and Substance-Abuse Disorders (SUD).

## Material and methods

The source of surveyed data were patient records of patients hospitalized at the DCP in Bratislava – psychiatric examination records, standard history questionnaire and in selected cases outpatient records. Data collection was carried out retrospectively from patients hospitalized between January 1, 2001 and December 31, 2012. Statistic Package for Social Sciences (SPSS – 15.0) PC program was used for the data collection and sorting. The selection was made from the DCP patient database. The selection criterion was diagnosed at the end of hospitalization. We processed the data of all 20 patients hospitalized in this period with the SIP diagnosis, 50 patients with the EOS diagnosis, who were selected randomly, and 50 patients with SUD, who were also selected randomly. We collected and compared their medical history data, focusing on the presence of a psychotic disorder and addiction in the family. We also focused on perinatal factors, early psychomotor develop-

ment, history data on outpatient psychiatric care, and the presence of unfavorable life situations in their childhood. The collected data were processed by means of descriptive statistical procedures, and recorded by means of standard graphical methods.

## Results

Out of the overall number of 3,496 patients (2,069 boys and 1,427 girls) hospitalized at DCP in Bratislava between 2001 and 2012, 72 patients (46 boys and 26 girls) were diagnosed with EOS, representing 2.06 % of the overall number of hospitalized patients over 12 years. 793 patients (488 boys and 305 girls) were hospitalized with SUD in the same period (22.68 % of the overall number of patients). Out of the overall number of hospitalized patients, 20 patients (14 boys and 6 girls, representing 0.57 %) fulfilled the diagnostic criteria of Substance-Induced Psychosis. All patients were cannabis abusers, 9 of them also abused methamphetamine and 6 of them also abused several other drugs.

Family history data were monitored in patient groups. The results are shown in Table 1.

Records of SIP patients include the occurrence of schizophrenia of their close relatives in 20 % (n = 4), addictive disorders in 10 % (n = 2), and the history of 50 % of them did not include psychical disorders. SUD patients' family histories included schizophrenia in only 8 % (n = 4), addictive disorders in up to 36 % (n = 18), and 36 % of them had a negative family history. In the last EOS patient group, family histories included schizophrenia in 24 % of cases (n = 12), addictive disorders in 20 % of cases (n = 10), and 40 % of patients (n = 20) had a negative family history.

Figure 1 shows data from the period of pregnancy, delivery, and early psychomotor development. It comprises two columns for each patient group. The first column informs on the frequency of prenatal or perinatal complications. The second column informs on the frequency of delays in early psychomotor development.

**Tab. 1. Comparison of the family history.**

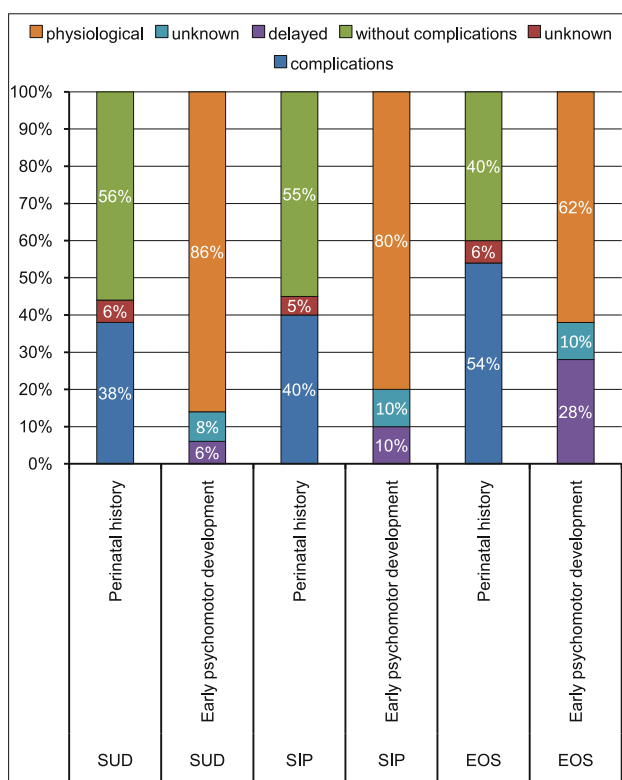
Family history	SIP (n=20)		EOS (n=50)		SUD (n=50)	
	n	%	n	%	n	%
Addiction	2	10	8	16	17	34
Schizophrenia	4	20	10	20	3	6
Addiction and schizophrenia	0	0	2	4	1	2
Other psychic disorders	4	20	8	16	5	10
Unknown family history	0	0	2	4	6	12
Negative family history	10	50	20	40	18	36

Comparison of the family history of adolescents hospitalized with Substance-Induced Psychosis (SIP), Early Onset Schizophrenia (EOS) and with Substance Use Disorders (SUD)

**Tab. 2. The presence of unfavorable life situations.**

Unfavorable life situations	SIP (n=20)		EOS (n=50)		SUD (n=50)	
	n	%	n	%	n	%
Family breakdowns	6	30	13	26	34	68
Victims of bullying at school	0	0	5	10	2	4
Serious somatic illness in family	2	10	5	10	9	18
Living with a psychically ill parent	3	15	2	4	4	8
Neglecting and physical aggression towards a child	6	30	2	4	6	12

The presence of unfavorable life situations in adolescents hospitalized with Substance-Induced Psychosis (SIP), Early Onset Schizophrenia (EOS) and with Substance Use Disorders (SUD)



**Fig. 1. Comparison of perinatal history and early psychomotor development of adolescents hospitalized with Substance-Induced Psychosis (SIP), Early Onset Schizophrenia (EOS) and with Substance Use Disorders (SUD).**

The graph clearly shows that the highest frequency of problematic prenatal and perinatal periods was recorded for EOS patients (54 %, n = 27), who also recorded the highest frequency of delays in early psychomotor development (28 %, n = 14). Quite high frequency of complicated prenatal and perinatal periods was also recorded for SIP patients (40 %, n = 8), however delays in early psychomotor development in this group were only recorded for 2 patients (10 %). The group of SUD patients had the lowest frequency of complications in prenatal and perinatal periods, even though it was also relatively high (38 %, n = 19). Delays in

development were only recorded for a small number of patients (6 %, n = 3).

The presence of unfavorable life situations in the patients' childhood was monitored. We particularly focused on the frequency of family breakdowns, victims of bullying at school, presence of a serious somatic illness (possibly leading to death) of parents or siblings, the frequency of living with a psychically ill parent, the frequency of neglecting and physical aggression towards a child. The results are shown in Table 2.

According to the data we collected, up to 68 % (n = 34) of SUD patients came from broken families. Higher frequency of the presence of a serious somatic illness in close families (18 %, n = 9) was recorded in this group compared to other groups. Compared to other groups, EOS patients were more often victims of bullying at school (10 %, n = 5), and family breakdowns were recorded 13 times (26 %). Other monitored situations appeared with the lowest frequency compared to the two remaining groups of patients. High frequency of neglecting and physical aggression towards a child was recorded for SIP patients (30 %, n = 6). Compared to the remaining two groups, higher frequency of living with a psychically ill parent was also recorded in this group (15 %, n = 3). Family breakdown frequency of 30 % (n = 6) was recorded in SIP group.

Table 3 informs on psychiatric history data from the past medical history of patients, i.e. before the period of hospitalization with the monitored diagnosis. We chose the most often repeating diagnoses, with which patients had been examined and treated by their psychiatrists.

As the collected data shows, patients with the SIP diagnosis were not monitored in a psychiatric ward before their hospitalization in 45 % (n = 9), while 45 % (n = 9) were monitored for drug abuse. The group of SID patients most often included the diagnoses of conduct disorder (36 %, n = 18) and ADHD (26 %, n = 13). 16% (n = 8) of patients were not examined in a psychiatric ward before their hospitalization. EOS patients were monitored for various diagnoses, most often for OCD (20 %, n = 11), social phobia (12 %, n = 6) and mental retardation (12 %, n = 6).

**Discussion**

Substance-Induced Psychosis is rarely recorded by the age of 18. The DCP of Children's Faculty Hospital in Bratislava,

**Tab. 3. Psychiatric history data from the period before hospitalization with the monitored diagnosis.**

Psychiatric history	SIP (n=20)		EOS (n=50)		SUD (n=50)	
	n	%	n	%	n	%
None	9	45	14	28	8	16
Social phobia	1	5	6	12	1	2
OCD	0	0	11	22	0	0
Tentamen siucidii	2	10	5	10	6	12
Mental retardation MR	0	0	6	12	0	0
ADHD	1	5	3	6	13	26
CD-conduct disorder	3	15	3	6	18	36
SUD	9	45	6	12	X	X
Other diagnoses	2	10	25	50	17	34

Psychiatric history data of adolescents from the period before hospitalization with Substance-Induced Psychosis (SIP), Early Onset Schizophrenia (EOS) and with Substance Use Disorders (SUD).

hospitalized only 20 of these youngest SIP patients (0.57 % out of all hospitalized patients) over 12 years (2001 – 2012). Even though a quite small group of patients were engaged, a clear and more frequent occurrence was recorded for boys ( $n = 14$ ; 70 %). Some authors state that Substance-Induced Psychosis is characterized by male occurrence (18). The resulting imbalance for the benefit of boys cannot be equally interpreted as a result of more frequent behavior disorders, and psychotropic substances abuse by adolescent boys.

The comparison of family histories showed that in patients hospitalized with SIP, similarly to EOS patients, there was a significantly higher level of the occurrence of schizophrenic diseases and a lower level of the occurrence of addiction than in SUD patients. The Family history data of SIP patients are thus closer to those of EOS patients, which could point out to a greater hereditary vulnerability of these patients to psychotic disorders.

The results of the SIP group, more similar to those of EOS group than SUD group, were also recorded for the comparison of prenatal and perinatal medical history and frequency of the occurrence of subsequent delays in early psychomotor development. The highest frequency of risk pregnancy and perinatal complications was recorded in the EOS group (54 %), where also the highest frequency of the occurrence of delays in psychomotor development (28 %) as well as the ratio between both monitored frequencies (1:9:1) were recorded. The frequency of complications of 40 % and delays in development of 10 % were recorded in the SIP group. The ratio between them was 4:1. The lowest values were recorded in the SUD group, where the frequency of complications was 38 %, delays in development 6 %, and their ratio was only 6:3:1. On the grounds of higher frequency of delivery-related complications and subsequent delays in development, we cannot exclude that bigger or smaller changes to CNS could occur, subsequently increasing the vulnerability of CNS to Substance-Induced Psychosis development.

On the other hand, history data from the past medical history points out to a greater extent of psychical trauma and unfavorable life situations in SIP as well as EOS groups. The data of the SIP group are more similar to those of the SUD group regarding these results. Higher occurrence of unfavorable life situations, a trauma in childhood, contact with an addictive family member, start of psychoactive substances use at an early age, and the risk of sexual behavior are also described in relation to adolescents hospitalized with a dual diagnosis of psychosis and psychoactive substances abuse by Lachman (19).

Interesting data was also collected upon comparing the most frequent psychical disorders for which patients had been monitored before their hospitalization and treated in a psychiatric ward. OCD was not recorded before hospitalization in any of the SIP patients, and only one of them was treated for social phobia. These disorders are relatively often occurring before the beginning of a psychotic disorder (20) (21). Those were also the most frequent disorders recorded in EOS patients. 22 % ( $n = 11$ ) of EOS patients had been treated with OCD before the start of schizophrenia, and 12 % ( $n = 6$ ) of the patients had been treated for social phobia. The dominant reasons for which SIP patients had been

monitored in a psychiatric ward were psychoactive substance abuse and behavior disorders. Up to 45 % ( $n = 9$ ) of patients of this group had not been monitored in a psychiatric ward before substance-induced psychosis began, which is the greatest number from all groups.

## Conclusion

To conclude our findings, it seems that the history data of patients hospitalized with Substance-Induced Psychosis point to a greater hereditary burden in relation to schizophrenic illness than in SUD patients. They at the same time show a greater probability of possible discrete neurological changes, with regard to the frequency of perinatal complications as well as the ratio between the complications and subsequent delays in early psychomotor development. Their numerical values are lower; however, they are approaching the values of EOS patients. On the other hand, the values of premorbid data on the presence of psychical trauma and problematic life situations of SIP patients are rather similar to SUD patients. Equally, psychical problems and disorders for which patients had been monitored and treated before their hospitalization are not typical of EOS patients, but rather of disorders occurring in relation to patients abusing psychoactive substances. The authors realize that the results can be distorted to a certain extent by a small number of patients, and they are planning to continue collecting data of further patients and to perform more detailed examinations of the youngest patients suffering from Substance-Induced Psychosis.

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Received February 25, 2014.

Accepted June 20, 2014.