

Communicative Disorders: Presentation, Prevalence and Socio-demographic characteristics in the Special Need Center-Ain Shams University

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Abstract

Background: Determination of the prevalence, risk factors and clinical representation of the different types of communication disorders is the start point of determination of the magnitude of the problem among our community and thereafter drawing a culturally sensitive prevention program against these disorders. Despite being an area of interest and research different data regarding the communicative competence of Egyptian children with communication disorders remain deficient.

The aim of the work: the current work is aiming to:

- 1- Determine the prevalence of different forms of communication disorders among a sample of Egyptian children attending the Special Needs Center of Ain Shams University.
- 2- Determine some biological and environmental factors that are associated with communication disorders.
- 3- Describe the passive as well as active language skills among children with Delayed Language development.

Patients and methods: A descriptive cross-sectional study based on the selective randomized technique was conducted in the period between January 2017 and January 2019 on a sample of communicatively impaired Egyptian children (152 (70.69%) males and 63 (29.3%) females) in the age range between 1 year 8 months to 10 years attended the phoniatics clinic of the Special Needs Center, Faculty of Post-Graduate Childhood Studies, Ain-Shams University. They were subjected to a comprehensive communication competence assessment protocol. According to the assessment protocol, the etiological diagnosis of communication disorders and its clinical presentation was determined.

Results: Delayed language development was the most commonly presented communication disorder among the studied sample. The order of the etiological diagnosis of delayed language development among the studied sample was mental retardation and neurodevelopmental disorders in the form of ASD. Being a male in the kindergarten grade at the 1st order in a family (highly educated father) which developed from a non-consanguineous marriage with merely presence of family history of similar cases are the most commonly presented socio-demographic characteristic. Seventeen percent of children with DLD are exhibited either pre-verbal or minimal verbal expressive skills.

Conclusion: language disorders are the most common clinical presentation of communication disorders. The pathogenesis of Delayed Language development among Egyptian children in the current work is a multifactorial (biological, environmental, and organic) in nature. Delayed language development due to mental retardation is the most common form of the communication disorders among a sample of communicatively impaired Egyptian children. Around 17% of children with DLD are non-verbal (30%) received the diagnosis of ASD.

Key words: communication disorders, prevalence of communication disorders, the clinical presentation of communication disorders, Delayed Language Development, clinical presentation of delayed language disorders.

Background

AS a developing country, Egyptian children are at increased risk for development of communication disorders due to many factors. Furthermore, advancement in technology which safe infant's life but with many morbidities and serious sequences that affect all developmental areas (motoric, cognitive, social, emotional, communicative, literacy...etc.)¹. Khan et al.² (2006) have speculated that while the overall prevalence of disability among developing countries remained constant over the past ten years, there has been a shift from more severe disabilities to a milder problems related to cognitive impairment, behavioral, and hearing and communication impairment. The prevalence of communication disorders among a Nursery based survey which included 852 Egyptian children in the age range between 3 years and 6 years was estimated by Gad-Allah et al.³. They determined that 44.4% of their studied sample had communication disorders. Intervention services that should be introduced to children with communication disorders necessitate many data that should be gathered from this population. Upper Egypt study among 3171 individuals by Aboul- Oyou⁴ found that the overall prevalence of communication disorders was 7.9%. The severity, the type of communication disorder and the surveyed population are reasons that could explain the large variability among studies.⁵ However, epidemiological information about the socio-

demographic characteristics, confounding risk factors and the clinical presentation of these disorders were poorly represented in the research work. These data could be the corner stone for the development of community-based intervention program.

The current work was aiming at studying the prevalence of the communication disorders among a sample of communicatively impaired Egyptian children and determining some epidemiological as well as clinical presentation of this challenging group of disorders.

Patients and methods

The present study was a cross sectional descriptive study conducted on 242 children recruited from the outpatient clinic of the Special Needs center, Faculty of Post-Graduate Childhood Studies, Ain-Shams University in the period between January 2017 and January 2019. Inclusion criteria included: Egyptian children who are in the age range between 1 year 6 months and 10 years of both gender with Egyptian dialect as their mother tongue language who are seeking the medical advice for their communication disorders was included in this study. The data was collected via a structured interview with one of the parents or both of them. The study was approved by the Research Ethics Committee of Faculty of post graduate childhood studies Ain Shams University.

All patients were subjected to detailed history taking using structured interview, questionnaire and semi-objective assessment of communicative abilities.

The structured Interview included:

- A- **Elementary diagnostic procedures;** These included complete history taking, general examination, ENT examination, neurological examination, and subjective evaluation of language, speech, and voice
- B- **Clinical Diagnostic Aids;** these included:
 - i- Psychiatric interview based on Diagnostic and Statistical Manual of Mental disorders, fifth edition (DSM-V)⁶, Psychometric assessment was done for children to estimate their cognitive abilities (according to the child's age and verbal abilities) by Stanford-Binet Intelligence Scales-

fifth Edition- the Arabic version by Abu El-Nil⁷, Vineland Adaptive Behavior Scales (VABS)- the Arabic version⁸, assess severity of Autism Spectrum Disorder (ASD) by Childhood Autism Rating Scale (CARS)- Arabic version⁹ and to determine the severity of inattention and hyperactivity in children with Attention Deficit Hyperactivity Disorder (ADHD) by severity checklist IV(ADHD-SC4) parent form-Arabic¹⁰.

- ii- Audiological assessment of all cases of delayed language development to estimate audiological functioning by Tympanometry¹¹ and Basic audiological tests¹² (Behavioral audiometry (pure tone or play), for cooperative children. Auditory Brainstem Response (ABR), it is an objective test, and suitable for uncooperative children.¹³
- iii- Subjective assessment of the communicative abilities through a semi structured interview in order to gather information regarding the child's communicative skills (the passive and the active one).. The motoric speech act was carried on using assessment of the motor speech act Assessment of the motoric speech act (power, symmetry, fluency and presence of any articulation errors).

Statistical Methods

The collected data was organized; tabulated and analyzed using the statistical package for the social science (SPSS) version 20. The data were presented as numbers and percentages for the qualitative data and mean, standard deviations and ranges for the quantitative data. Chi-square test was used to compare frequency of qualitative variables among the different groups. For all tests a probability (p) < 0.05 was considered significant.

Results:

1- Descriptive results:

The current study included sample was 242 communicatively impaired children (173 males (71.5%) and 69 females (28.5%)) in the age range between 1 year 6 months and 10 years. Different etiological diagnoses among the studied sample were

presented in table (1). The socio-demographic data of children with Delayed Language Disorders were shown in table (2).

Table (1): determined the different etiological diagnosis of different communication disorders:

Different diagnosis	Frequency (percent%)
DLD due to MR	49/242 (20.3%)
DLD due to below average mentality	47/242 (19.4%)
DLD due HI	13/242 (5.4%)
DLD due to ASD	30/242 (12.4%)
DLD due to ADHD	8/242 (3.31%)
BDMH	9/242 (3.72%)
DLD due to environmental deprivation	29/242 (11.98)
SLI	30/242 (12.4%)
Total	215/242 (88.84%)
Language based learning disability	10/242 (4.1%)
Stuttering	9/242 (3.72%)
Dysarthria	3/242 (1.24%)
Cluttering.	1/242 (0.41%)
Developmental apraxia	2/242 (0.83%)
Nasality	1/242 (0.41%)
Dyslalia	1/242 (0.41%)
Total	242

DLD=Delayed Language Development; MR= Mental Retardation; HI=Hearing Impairment, ASD=autism Spectrum Disorder, ADHD= Attention Deficit Hyperactivity Disorder, BDMH=Brain Damaged Motorly Handicapped, SLI= specific language Impairment.

Table (2): showed some socio-demographic data of children with different types of DLD:

Personal data	DLD due to MR	DLD due to below average	SLI	DLD due to HI	DLD due to environmental deprivation	DLD due to ASD	DLD due to ADHD	BDMH	Total	Chi-square
Age of presentation:										
-< 2 years	1	0	0	1	2	0	0	2	6 (2.8%)	0.000***
-Pre-school	15	11	7	3	17	12	1	5	71 (33%)	
-Early school years	14	20	15	4	5	14	3	0	75 (34.9%)	
-late school years	8	9	7	2	5	4	4	0	39 (18.13%)	
-8-10 years	11	7	1	3	0	0	0	2	24 (11.2%)	
Gender										
-male	39	25	22	11	18	26	5	6	152 (70.69%)	0.214
-female	10	22	8	2	11	4	3	3	63 (29.3%)	
Order of birth										
-1 st	27	15	21	8	20	14	6	4	115 (53.5%)	0.679
-2 nd	17	23	8	4	8	12	2	4	78 (36.27%)	
-other	5	9	1	1	1	4	0	1	22(10.23%)	
Consanguinity										
-negative	40	43	24	8	22	24	4	8	173 (80.5%)	0.321
-positive	9	4	6	5	7	6	4	1	42 (19.53%)	
Family history										
- negative	39	43	25	10	24	26	6	8	181 (84.18%)	0.195
-positive	10	4	5	3	5	4	2	1	34 (15.81%)	
Father's education employment										
- illiterate	3	1	0	1	0	2	0	1	8 (4.7%)	0.105
- primary/elementary	3	6	2	0	0	3	0	3	17 (7.91%)	
- technical	14	14	9	6	10	10	2	1	66 (30.69%)	
-university	23	15	15	4	12	14	4	2	89(41.39%)	
-post-graduate	6	11	4	2	7	1	2	2	35 (16.27%)	
Maternal employment										
- not	30	27	25	12	25	23	6	5	135 (71.1%)	0.048*
- work	19	20	5	1	4	7	2	4	62 (28.84%)	

Pre-school (1 year 6 months to <3 years 11 month), Early school years (4 years to <5 years 11 month), Late school years (6 years to <7 years 11 months). Pearson Chi-square test was highly significant for the age of presentation of language disorders. The early school years was the most frequently presenting age of DLD among the current study. The second significant was related to mother employment (the un employed mother was statistically higher).

Table (3): Showed the medical history of the children with delayed language development (pre-natal, natal, post- natal, and significant data in the past history)

Medical history	DLD due to MR	DLD due to below average	SLI	DLD due to HI	DLD due to environmental deprivation	DLD due to ASD	DLD due to ADHD	BDMH	Total	Chi-square
Pre-natal										
-no problem	19	29	25	9	24	13	5	3	119 (55.4%)	0.000***
- maternal:	19	12	3	3	18	14	2	4	68 (31.6%)	
-fatal	5	3	2	1	0	0	1	1	13 (6%)	
- mixed	6	3	0	0	4	3	0	1	15 (6.97%)	
Natal:										
-normal vaginal delivery	13	15	11	5	8	7	2	2	63 (29.3%)	0.242
-obstructed vaginal delivery	6	4	2	1	1	1	2	3	20 (9.3%)	
- after trial of obstructed	2	2	1	2	3	3	1	2	16 (7.44%)	
- elective C.S	28	26	16	5	17	19	3	2	116 (54%)	
Post-natal;										
-no-problem	29	30	26	8	23	16	7	4	143 (66.5%)	0.043*
-cyanosis	6	5	1	0	0	1	0	1	14 (6.5%)	
-incubated more than one day	6	5	0	1	3	4	0	1	20 (9.3%)	
-jaundice level ≥ 16	6	4	0	3	1	5	0	1	20 (9.3%)	
-other (above average weight, fever)	1	0	0	0	1	1	1	0	4 (1.86%)	
-congenital anomalies	1	2	3	1	1	1	0	1	10 (4.65%)	
-more than one risk factor	0	1	0	0	0	2	0	1	4 (1.86%)	
Medical past history:										
-No problem	36	38	24	3	19	18	5	2	145 (67.4%)	0.002**
-Head trauma	0	2	0	1	0	0	1	2	6 (2.79%)	
-Ear disease	4	3	2	9	3	4	1	0	26 (12.1%)	
-Fever	1	0	0	0	0	1	0	0	2(0.9%)	
-Convulsion	3	2	4	0	6	5	1	3	24 (11.16%)	
-More than one	1	0	0	0	1	0	0	1	3 (1.39%)	
(head trauma, ear disease, fever)	4	2	0	0	0	2	0	1	9 (4.18%)	
Developmental history										
-no problem	29	39	25	11	18	14	3	2	141 (65.6%)	0.002**
-delayed walking	3	5	1	0	3	1	1	1	15 (6.97%)	
-delayed toilet training	4	1	1	0	5	8	2	0	21 (9.76%)	
- delayed more than two-mile stone	13	2	3	2	3	7	2	6	38 (17.67%)	
	49	47	30	13	29	30	8	9	215	

By cross tabulation, Pearson Chi-square was 0.000 which denoted that there is a statistical significance difference in the prenatal period event between different causes of DLD. The statistical

significance was also in the post-natal period events and in the past history chi-square was 0.002 among different DLD causes.

Table (4): determined the communicative abilities (passive and expressive) among different types of DLD diagnoses

Personal data	DLD due to MR	DLD due to below average	SLI	DLD due to HI	DLD due to environmental deprivation	DLD due to ASD	DLD due to ADHD	BDMH	Total	Chi-square
Passive vocabulary:										
- + ve eye contact	25	18	4	11	17	17	5	4	101(47%)	0.00***
- -ve eye contact	3	0	0	0	6	8	0	2	19 (8.8%)	
- + ve eye contact & respond to his name and most of instructions	21	29	26	2	6	5	3	3	95(44.2%)	
Active vocabulary:										
- vocal play	1	0	0	0	1	2	0	3	7 (3.25%)	0.000***
-reduplicat babbling	5	4	0	3	4	7	1	2	26 (12%)	
- jargon	0	0	1	2	2	2	1	0	8 (3.7%)	
- single words	12	4	2	2	9	7	2	1	39 (18%)	
- 2-3-word sentence	12	10	6	2	4	3	1	0	38(17.7%)	
- long sentence with syntactic errors	17	27	15	4	9	9	2	0	83(38.6%)	
-Phonolog errors	1	1	0	0	0	0	0	3	5 (2.32%)	
- can tell a story with pragmatic disorder	1	0	5	0	0	0	0	0	6 (2.79%)	
-can tell a story with phological disorder	0	1	1	0	0	0	1	0	3 (1.39%)	

The table showed that different types of DLD are discriminated significantly on the receptive and expressive levels.

Discussion

Interchange of ideas, knowledge, and beliefs between two partners through a variety of ways is considered as one of unique property of human being. This property was known as communication which poses a complex cognitive, linguistic, emotional and motoric activity. From this aspect any compromise of this remarkable function of human brain is considered as a disabling disorder. The nature by which the brain areas are interconnected and related to each other makes deficit in one area negatively impacting others. Accordingly, communication disorders have its short-term sequel as well as long term sequel throughout life span of affected individuals.¹⁴

The current study determined that the prevalence of different types of communication disorders among a sample of communicatively impaired Egyptian children was as follow: 88.8% for DLD, 7.2% for speech disorders, and 4.1% for language-based learning disability. Variability in surveyed population (community based, hospital based, school based), the tools used for the assessment and how communication disorders and its types are defined in these studies make it difficult to compare this data with similar work. *Gharib et al.*¹⁵ conducted a hospital-based survey and reported that 23% of children attending the phoniatrics clinic at Alexandria University have confirmed communication disorders. The frequency of different types of communication disorders among their work was as follow: 64% for DLD; 32.3% for speech disorder, 22.1% received the diagnosis of language and speech comorbidities and 3.5% of cases were due to voice disorders. The major contribution of DLD in the two studies was the point of similarity between the two studies. The prevalence of language disorders was also reported by *Baker and Cantwell*¹⁶ They reported in their sample of 180 children with language and speech disorder that 76 (42.22%) children were suffering from pure speech disorders and 104 (57.77) were suffering from pure language disorder. *Maulik and Darmstadt*¹⁷ determined that there is a paucity of studies that estimated the prevalence of language disorders among the communicatively impaired children.

Secondary language disorders are due to mental retardation, hearing loss, psychiatric disorders or environmental deprivation or otherwise it is considered primary. The current sample estimated the rate of occurrence of different types of DLD as follow: mental retardation was in (20.3%), DLD due to below average mentality was in (19.4%), DLD due to hearing impairment was in (5.4%), DLD due to ASD was in (12.4%) and DLD due to ADHD was in (3.31%), and DLD associated with Brain Damage Motorly Handicapped was in (BDMH) (3.72%), DLD due to environmental deprivation was in (11.98%) and lastly but not least Specific Language Impairment (SLI) was in (12.4%). *Pinborough-Zimmerman et al.*¹⁸ reported that the inclusion of children with intellectual disabilities and ASD were the causes for increasing estimates of communication disorder. *Gharib et al.*¹⁵ determined that primary DLD was in 1.8%, 1.1% were for DLD associated with ADHD; 0.7% was for DLD due to ASD, 1.4% had DLD due to environmental deprivation, 1.4% had DLD due to MR, whereas DLD due to hearing impairment was among 1.3%. The discrepancy between the current work data and that reported by Gharieb et al. may be due to the high specialization of the special need center in diagnosing and rehabilitation of children with communication disorders. *Gad-Allah et al.*² revealed that 19.7% of their studied samples had DLD without apparent cause, 7% had DLD due to ADHD, 2.8% had DLD due to ASD, and 1.3% had DLD due to hearing impairment. The difference between the two studies could be contributed to the nature of population from which the two studies drained their sample.

The current work determined that the majority of children (68%) with delayed language development was presented in the range between 2 years to 6 years. The age of seeking medical advice of the children with DLD among the current work was agreed with what has published by *Mostafa and Ahmed*¹⁹. They showed that 67.4% out of 1300 participants responded that the age of 2 years is the age which is suitable for seeking medical advice for DLD. They reported that more than half of their participants don't realize the value of early language learning. Gharib et al agreed with the current work and determined that DLD is

more prevalent among children aged 3 years and least prevalent among children who were 6 years of age.

Being a male was a biological risk factor as (70.69%) of the current sample cases were male children. In this aspect the current work goes in agreement with what has been reported by *Gharib et al.*¹⁵, *AboFadan and Sabra*²⁰, *Molini-Avejonas et al.*²¹, *Campbell et al.*²², *Al-Fadhli and Al-Bunaian*²³ and *Geschwind*²⁴. They all reported that boys are vulnerable to delayed language development than girls. Literatures explained this fact by slow maturation of the central nervous system among boys and negative impact of testosterone on the development of areas essential for speech skills.

Children of the current sample belongs to illiterate father in (4.7%), get elementary education certificate only in (7.9%), reaching technical education in (30.69%) and were a university graduate in (41.39%) and received a post graduate education in (16.27%). Working mother were among 28.84% whereas, 71.1% of the current work sample children belongs to a non-working mother. *AboFadan and Sabra*²⁰ agreed with the current work data (56% of their children belongs to a university graduate father) despite of the difference in the place of the study between the two work (large city like Cairo in the current work and a small one like Assuit in their work). The contribution of the socioeconomic status as a risk factor was mentioned by *Campbell et al.*²² while its absence in the risk factors for communication disorders was addressed by *Mondal et al.*²⁵ and *Mostafa and Ahmed*¹⁹, *Mickinnon et al.*²⁶ and *Broomfield and Dodd*²⁷ reported that social background is known to be related to the rate of language development; however, the link with language impairments is not strong.

It was reported by the current work that 53.5% of the children with delayed language development was of the first order. This was in accordance with *Gharib et al.*¹⁵, *AboFadan and Sabra*²⁰, *Eickstein*²⁸ and *Chaimay et al.*²⁹ The current work showed that consanguinity was among only 19.53% which was significantly lower than *AboFadan and Sabra*²⁰ and *Abu-Rabia and Maroun*³⁰. The cause of the difference between the current work data and their studies could be attributed

to the cultural nature of the citizens in the two studies. *Gharib et al.*¹⁷ agreed with our results and reported 27.1% of consanguineous marriage among their work. The agreement between Alexandria study and the current work could be attributed to the cultural nature of two large city like Cairo and Alexandria.

The presence of family history of similar condition among the current work children was documented only among 15.81% of the cases. This figure mismatching what has been published by *AboFadan and Sabra*²⁰, *Mishra*³¹, and *Al-Fadhli and Al-Bunaian*²³. They explained their high frequency by genetic inheritance³² and the fact that all family members are sharing the same environmental risk factors.

The prenatal risk factors in the current work were discussed in the form of maternal and fetal risk factors and mixed. The majority of children (55%) showed no problem during the prenatal period and 31.6% showed maternal problems during pregnancy. This agrees with *AboFadan and Sabra*.²⁰

The current work determined that 54% of children in the current work delivered by elective Cesarean section. However, *AboFadan and Sabra*²⁰ determined that difficult birth process (in 22%) was caused by traditions in Upper Egypt which make midwife attended (14.7%) of the delivery.

Post-natal period was silent in 66.5% of children among the current work and complicated post-natal period was due to cyanosis in (6.5%), prematurity (6%) hyper-bilirubinemia in (9.3%) and Neonatal Intensive Care Unit (NICU) admission in (9.3%). *EL-Meligy and El-Sbbagh*³³ agreed with us in frequency of children with hyper-bilirubinemia and prematurity but was higher in cases of hypoxic ischemic encephalopathy (the investigated more severe developmental disorders). *AboFadan and Sabra*²⁰ also reported higher rate of NICU admission among their sample (36%). However, they did not determine the period of admission.

The early childhood life passed without complication in (67.4%) and only (12%) experienced single attacks of otitis media and (11%) had convulsion. *Gharib et al.*¹⁵ and *Abd el-Hamid et al.*³⁴ agreed with this finding. However, *AboFadan and Sabra*²⁰ disagree on the contribution of otitis media to the development of DLD.

It was noticed that the majority of children have no events during the perinatal period and this finding support the multifactorial hypothesis (both biological and environmental factors should

collaborate) in the pathogenesis of communication disorders. *EL-Meligy and El-Sbbagh*³³ found that 36% of their studied sample of developmental disorders showed no cause in their history. The difference between the two figures could be attributed to the severity of cases studied in *EL-Meligy and El-Sbbagh*³³.

Developmentally children with delayed language development were neat in other developmental areas. Areas which showed delayed mile stones was toilet training. This finding mismatches *EL-Meligy and El-Sbbagh*³³ (they reported 14% of their sample with average developmental score). This could be explained by the final diagnoses they reached was Cerebral palsy in (45%), non-specific Mental Retardation (32%) of their sample.

The communicative assessment of children among the current work was semi-structured and it depends mainly on child-clinician interaction during a semi-structured with many tools to help the child to present most of his communicative skills. Sometimes the clinician asked the parents to bring a video record of their child in the one environment. Communication skills were discussed in the term of passive as well as active one. Passive language skills were (in the form of presence of eye contact, shared attention and the child's response to orders presented by the clinician. The active communicative skills were discussed in 4 language parameters (length of sentence - if any-, syntax, phonology and pragmatics). Results showed that (50%) of children was presented with adequate eye contact and up to (44%) respond adequately to different orders requested by the clinician. Actively 79% of the children could communicate verbally with different length of sentences, grammatical roles, intact phonology and pragmatic skills. Only 19 % of the current sample was non-verbal. Among verbal children poor syntax was documented among (56.3%), phonological errors among (3.6%). Inadequate conversational competence was reported among (3%).

Regardless many debates raised by *Lindsay and Strand*³⁵ *Tambyria et al.*³⁶ towards differentiation children with language impairment with different terminology.

The current work determined some communicative skills among different types of DLD. ADHD is the commonest psychiatric disorder that is associated with DLD impairment. It was reported by the current work that 3,3% of the assessed children had

DLD. *El-Sady et al.*³⁷ reported that more than 70% of children with ADHD had DLD but they were underdiagnosed. In addition, they viewed that ADHD has two presentation early in life as environmental deprivation and later on when the language appears, the clinical presentation of ADHD appears. *Baker and Canwell*¹⁶ reported that 16% of their sample of children with pure language disorder had ADHD. The current work participants found the same prevalence if we accept the point of view implemented by *El-Sady et al.*³⁷ they reported that up to 70% of their ADHD sample have variable degree of DLD.

The second common psychiatric disorder with DLD was ASD. Delayed language development was one of the core features of ASD and which make concern of the parents regarding the developmental delay of their child³⁸. The current work documented that the prevalence of ASD among a sample of communicatively impaired children was 12.4% which is higher than *Elalfy and Mohammed*³⁹ and *Christensen et al*⁴⁰. The low prevalence in Elalfy and Mohammed compared to the current work could be due to their selective criteria in inclusion of newly coming cases who did not receive any form of intervention. The current work determined that passive communicative skills were as follow: 56% have an adequate eye contact, 26% had poor eye contact and up to 16% had some form of language comprehension. While the active communicative skills was non-verbal in 36.7%, have expressive abilities with variable length of sentences with variable degrees of syntactic and phonological errors. This heterogeneity of cognitive and linguistic abilities among ASD children was reported by *Tager-Flusberg and Kasar*⁴¹. It was reported by the same author that between 50-30% of ASD children will remain non-verbal. The mechanism underlies the expressive abilities of ASD remained unidentified some correlate it with low non-verbal cognitive mechanisms and other accused the significant delay in development of oro-motor skills.⁴² The third cause of DLD among the current work was Specific language impairment. It was found by the current study that 13.9% of children with DLD. This agreed with *Archibald and Gathercole*⁴³ and *Sallam*⁴⁴, the communicative skills among SLI children were in a form spared receptive language skills, and variable degrees of expressive abilities compromise (single word sentence to story-telling i.e. non them were non-verbal) with variable degree of syntactic and pragmatic deficit. These results cope with Sallam⁴⁴ and *Faheim & Mohammed*⁴⁵.

The fourth cause of DLD among the current work was hearing impairment. It was found among the current work that 5.4% of children with DLD. It was reported by *Abd El-Hamid et al.*³⁴ reported that the prevalence of hearing loss among Egyptian children aged 0-12 years was 32%, language and speech therapy was needed by 11% of them and only 1.1% received adequate language rehabilitation. The variability of the degree of hearing loss influences the degree of language deficit as shown by data displayed in the current work.

The fifth cause of DLD among the current work was mental retardation. The current work reported that 20% of the current work participants have DLD due to MR. *Samuel et al.*⁴⁶ reported the same ratio. *Ahmed et al.*⁴⁷, *Abo El-Saad et al.*⁴⁸ reported that the DLD due to Intellectual disability was the highest cause of DLD it accounted for 34% of their sample. Again, variability in severity of MR implement variable degree of language compromise and this was clarified in the current work. However, it was found that 84% of children with DLD due to MR were verbal.

The sixth type of DLD was reported among the current work was DLD due to below average. It was found that 20% of the current work children received such diagnosis. In that aspect it went in the same direction with *Ahmed et al.*⁴⁷, *Abo El-Saad et al.*⁴⁸. The lack of diagnostic approach and well demarcated clinical feature made marked debate about the existence of such disorder. In addition to this, the substitution of SLI Diagnosis in the *DMS-V*⁶ by Developmental Language Disorder terminology which incorporates children with average and below average Non-verbal intelligence quotient, support the absence of a real existence of DLD due to below average intellectual disability. This point of view was supported by *Norbury et al.*⁴⁹. They found that children with DLD due to average or below average mentality are presented with the same score in the language deficit, social, emotion and behavioral problems and even academic success. The current work supported the view point of Norbury as around 86% of children in each of the both groups were verbal and have variable degrees of expressive skills.

Ethical considerations: Ethical consideration according to the research ethics committee of both Ain Shams University and Faculty of postgraduate childhood studies.

Conclusions: language disorders are the most common clinical presentation of communication disorders. The pathogenesis of Delayed Language

development among Egyptian children in the current work is a multifactorial (biological, environmental, and organic) in nature. Around 17% of children with DLD are non-verbal (30%) received the diagnosis of ASD.

Recommendations: the current work recommended the import development of a nation communication disorder prevention protocol which is composed of two levels. The first is the Primary preventive measure which included proper antenatal care, adequate and timely effective management of natal and post-natal hazards. Joint Cooperative protocol should be constructed between NICU and rehabilitation that provide early screening and intervention for developmental disorder. Increase awareness of the pediatrician towards the normal developmental pathway of language development, guidelines that should be followed and warning signs for referral for formal testing and testing. Special consideration should be directed toward terminology of DLD.

References

- 1- **WHO 2012.** Developmental difficulties in early childhood: prevention, early identification, assessment and intervention in low- and middle-income countries. A review. Geneva: World Health Organization.
- 2- *Khan NZ et al. (2006)* Neurodevelopmental outcomes of preterm infants in Bangladesh. *Pediatrics*. 118: 280–289.
- 3- *Gad-Allah, H., Abd-Elraouf, S., Abou-Elsaad, T. & Abd-Elwahed, M.* 2012. Identification of communication disorders among Egyptian Arabic-speaking nursery schools' children. *Egyptian Journal of Ear, Nose, Throat and Allied Sciences*, 13: (2), 83-90.
- 4- *Aboul-Oyoun, A.* 2000. Epidemiological study of communicative disorders in Upper Egypt. Unpublished doctoral dissertation, Faculty of Medicine. Ain Shams university, Cairo, Egypt.
- 5- *Law, J., Dockrell, J.E., Castlenuovo E., Williams, K., Seeff, B. and Normand, C.*, 2006, Early Years Centers services for pre-school children with primary language difficulties: what do they cost? And are they

- cost effective? *International Journal of Language and Communication Disorders*, 4, 67–83.
- 6- **American Psychiatric Association** (2013): *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
 - 7- **Abu El-Nil M** (2011): *Stanford Binet intelligence scale- fifth image- Arab institution for the preparation, standardization and dissemination of psychological tests*, Cairo, Egypt
 - 8- **Elwan F** (2000): *Vineland Adaptive Behavior Scales*, Publications of the Sparrow SS, Balla DA, and Cicchetti DV (1984): *Vineland Adaptive Behavior Scales*. Circle Pines, MN: American Guidance Service. Research Center for Psychological Studies, Cairo, Egypt.
 - 9- **Rellini E, Tortolani D, Trillo S, Carbone S, Montecchi F** (2004): Childhood Autism Rating Scale (CARS) and Autism Behavior Checklist (ABC) correspondence and conflicts with DSM-IV criteria in diagnosis of autism. *J Autism DevDisord.*; 34:703–708
 - 10- **Youssef G and Hassan Z** (2002): *Arabic Translation of ADHD Symptom Checklist-4scale*. Cairo, Egypt: Faculty of Literature, Cairo University.
 - 11- **Anwar K, Khan S, Rehman H, Javaid M, Shahabi I** (2016): Otitis media with effusion: Accuracy of tympanometry in detecting fluid in the middle ears of children at myringotomies, *Pak J Med Sc*, 32, 2, 466-470.
 - 12- **Al-shuaib W, Al-Kandari J, and Hasan S** (2015): *Classification of Hearing Loss. Update on Hearing Loss*, 30-46.
 - 13- **Avlonitou E, Balatsouras D, Margaritis E, Giannakopoulos P, Douniadakis D, Tsakanikos M** (2011): Use of chloral hydrate as sedative for auditory brainstem response testing in a pediatric population, *Int. J. Pediatr. Otorhinolaryngol.* 75 (6) 760–763.
 - 14- **Aboul-Oyoum, A.** 2000. *Epidemiological study of communicative disorders in Upper Egypt. Unpublished doctoral dissertation, Faculty of Medicine. Ain Shams university, Cairo, Egypt.*
 - 15- **Maulik, P. K. & Darmstadt, G. L.** 2007. *Childhood disability in low-and middle-income countries: overview of screening, prevention, services, legislation, and epidemiology. Pediatrics*, 120: (Supplement 1), S1-S55.
 - 16- **Baker, L. & Cantwell, D. P.** 1982. *Psychiatric disorder in children with different types of communication disorders. Journal of Communication Disorders*, 15: (2), 113-126.
 - 17- **Gharib, B. A., El Banna, M. M., Khalil, M. & Abou Heikal, M. M.** 2017. *Prevalence and etiology of communication disorders in children attending Alexandria University Children’s Hospital, Egypt. Alexandria Journal of Pediatrics*, 30: (1), 17.
 - 18- **Pinborough-Zimmerman, J., Satterfield, R., Miller, J., Bilder, D., Hossain, S. & McMahon, W.** 2016. *Communication disorders: Prevalence and comorbid intellectual disability, autism, and emotional/behavioral disorders. American journal of speech-language pathology.*
 - 19- **Mostafa, E. & Ahmed, M. E.-R.** 2018. *Public awareness of delayed language development in Upper Egypt. The Egyptian Journal of Otolaryngology*, 34: (1), 94.
 - 20- **Abou-faddan & Sabra M.A** 2018. *Risk Factors of Delayed Language Development among Preschool Children Attending Assiut University Hospitals. The Medical Journal of Cairo University*, 86: (September), 2279-2285.
 - 21- **Molini-Avejonas, D. R., Ferreira, L. V. & Amato, C. A. d. L. H.** 2017. *Risk Factors for Speech-Language Pathologies in Children. Advances in Speech-language Pathology. IntechOpen.*
 - 22- **Campbell, T. F., Dollaghan, C. A., Rockette, H. E., Paradise, J. L., Feldman, H. M., Shriberg, L. D., et al.** 2003. *Risk factors for speech delay of unknown origin in 3-year-old children. Child Dev*, 74: (2), 346-57.
 - 23- **Al-Fadhli, K. Y. & Al-Bunaian, N. A. R.** 2017. *Prevalence and social influences of delayed language development in preschool-age Saudi children. International Journal of Science and Research*, 6: (8), 1712-1720.
 - 24- **Geschwind, N.** 1985. *Cerebral Lateralization. Archives of Neurology*, 42: (5), 428.
 - 25- **Mondal, N., Bhat, B. V., Plakkal, N., Thulasigam, M., Ajayan, P. & Poorna, D. R.** 2016. *Prevalence and risk factors of speech and language delay in children less than three*

- years of age. *Journal of Comprehensive Pediatrics*, 7: (2), e33173.
- 26- **McKinnon, K. A., Poppick, A., Dunn-Sigouin, E. & Deser, C. 2017.** An “observational large ensemble” to compare observed and modeled temperature trend uncertainty due to internal variability. *Journal of Climate*, 30: (19), 7585-7598.
 - 27- **Broomfield, J. & Dodd, B. 2011.** Is speech and language therapy effective for children with primary speech and language impairment? Report of a randomized control trial. *International Journal of Language & Communication Disorders*, 46: (6), 628-640.
 - 28- **Eickstein, D. J. T. J. o. I. P. 2000.** Empirical studies indicating significant birth-order related personality differences [Electronic version]. 56: 481-494.
 - 29- **Chaimay, B., Thinkhamrop, B. & Thinkhamrop, J. 2006.** Risk factors associated with language development problems in childhood—a literature review. *Journal-Medical Association of Thailand*, 89: (7), 1080
 - 30- **AbuRabia, S. & Maroun, L. 2005.** The effect of consanguineous marriage on reading disability in the Arab community. *Dyslexia*, 11: (1), 1-21.
 - 31- **Mishra, A. K. 2015.** Verbal Behaviour of the Mentally Retarded: A Psycholinguistic Study.
 - 32- **Dale, P., Simonoff, E., Bishop, D., Eley, T., Oliver, B., Price, T., et al. 1998.** Genetic influence on language delay in two-year-old children. *Nature neuroscience*, 1: (4), 324-328.
 - 33- **Meliegy EE., Sabbagh HE. (2004)** Etiologies of developmental delay in Egyptian children, *International Journal of Child Neuropsychiatry*. 1 (2004) 29-40.
 - 34- **Abdel Hamid, O Khatib O.M, Ali A, Morad, M, Kamel S 2007** Eastern Pattern and prevalence of hearing impairment In Egypt: a national household survey. *Mediterranean health Journal* vol 13 no. (5), 2007. 1170-1180.
 - 35- **Lindsay G. & Strand S 2016** Children with language impairment: prevalence, associations and ethnic disproportionality in an English population. *Frontiers in Education*, November 2016, (1): (2)
 - 36- **Tambyraja, S. R., Schmitt, M. B., Farquharson, K., and Justice, L. M. (2015).** Stability of language and literacy profiles of children with language impairment in the public schools. *J. Speech Lang. Hear. Res.* 58, 1167–1181.
 - 37- **El Sady S. R, Nabeih A.A. Mostafa E. A. A. Sadek A.A. 2013** Language impairment in attention deficit hyperactivity disorder in preschool children The Egyptian Journal of Medical Human Genetics (2013) 14, 383–389
 - 38- **Wetherby A.M. , Woods J, Allen L, Cleary J, Dickinson H, Lord C 2004** Early indicators of autism spectrum disorders in the second year of life *J Autism Dev Disord* , 2004 Oct;34(5):473-93.
 - 39- **Elalfy D. Y., Mohammed, H. O. (2019)** Epidemiological Features of Autism Spectrum Disorder (ASD): An Egyptian Sample *European Journal of Pediatrics* (2019) 178:1613–1800.
 - 40- **Christensen, D. L., Baio, J., Van Naarden Braun, K., et al. (2016).** Prevalence and characteristics of autism spectrum disorder among children aged 8 years—Autism and developmental disabilities monitoring network, 11 Sites, United States, 2012. *MMWR Surveillance Summary*, 65(3), 1–23
 - 41- **Tager-Flusberg, H. and Connie, Kasari C (2013).** Minimally Verbal School-Aged Children with Autism Spectrum Disorder: The Neglected End of the Spectrum , *Autism Res.* 2013 December ; 6(6).
 - 42- **Gernsbacher MA, Sauer E, Geye H, Schweigert E, Goldsmith HH. (2008)** Infant and toddler oral- and manual-motor skills predict later speech fluency in autism. *Journal of Child Psychology and Psychiatry.* 2008; 49:43–50.
 - 43- **Archibald L.M. and Gathercole S. 2006** Prevalence of SLI in Language Resource Units. *Journal of Research in Special Educational Needs*, 6 (1): 3–10
 - 44- **Fahiem A. F. & Mohammed H. O. (2019)** Panorama of the non-verbal cognitive abilities among children with SLI. *EJENTAS*. in press.

- 45- *Sallam YA.* 2011 Prevalence of subtypes of specific language impairment. Unpublished doctoral dissertation, Faculty of Medicine. Ain Shams university, Cairo, Egypt.
- 46- *Samuel E, Lerman-Sagie T, Nevo Y and Harel S (1995):* Epidemiology of developmental disorders in children in Tel Aviv. *Harefuah*, 128 (12): 759-62.
- 47- *Ahmed M. A, Mohamed M, Ali R A₃ and Ahmed M E 2018* **Documentation of delayed language development in Upper Egypt.** *EJENTAS*, 4 (20), Issue 3: 122-130
- Abou-Elsaad T., Abdel-Hady H., Baz H., ElShabrawi D.* (2017) Language and cognitive outcome for high-risk neonates at the age of 2-3 years - experience from an Arab Country, *World J Clin Pediatr.* 6 (2017) 24-33.

Study of Serum Presepsin and Amyloid-A as Biomarkers Predictor in Newborn Suspected to Neonatal Sepsis

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Abstract

Background: Infections are chief reasons of morbidity and mortality in neonates and known contributor for morbidity and mortality. One of most common and widely spread infection, is neonatal sepsis as it is the main reasons for hospitalization of newborns and responsible for 30- 50% of annual neonatal deaths in developing countries. Early diagnosis of neonatal septicemia is essential to initiate accurate antimicrobial therapy and currently available diagnostic tools are inadequate.

Aim: To investigate the role of presepsin and SAA as simple applicable tests for early prediction of newborn suspected to sepsis against sepsis scoring system.

Method: This is a case control study comprising 90 neonates with gestational age ≥ 34 weeks; 60 neonates and 30 controls. Presepsin, SAA, Check list of infant's presenting symptoms or signs and laboratory data were evaluated and recorded on first and third days of admission for neonates while were measured once on admission for controls.

Results: Serum presepsin and SAA levels significantly higher in patients than controls and were detected earlier than both clinical and laboratory data.

Conclusion: This study revealed that serum levels of Presepsin and SAA were accurate and highly sensitive and specific markers for the prediction and diagnosis of early onset sepsis in comparison to clinical and laboratory data. Recommendation: Presepsin and SAA are innovative combined biomarkers that have a highly predictive value in the diagnosis of early neonatal sepsis.

Keywords: Neonatal sepsis, Presepsin, Serum Amyloid A, sepsis scoring system.

بريسين و اميلويد A في مصل الدم كمؤشرات حيوية مقابل التنبؤ السريري في تشخيص تسمم الدم في حديثي الولادة

الخلفية: يعتبر تسمم الدم في حديثي الولادة من أخطر الحالات المرضية والتي تهدد الحياة محدثة معدلات ملحوظة في كلا من الإعتلال والوفيات. ولذلك بعد سرعة ودقة كلا من التشخيص وبداية العلاج أمر أساسي لتحسين النتائج المرجوه. برغم أن انخفاض معدل الوفيات هو التحدي الرئيسي في طب الطوارئ إلا أن كلا من تحاليل الدم التي تستخدم في تشخيص تسمم الدم والعلامات السريرية كلاهما غير دقيق. لذا كان لازاما من وجود مؤشر حيوي دقيق يساعد على التشخيص في أسرع وقت ممكن. والبريسين يعدوا أكثر المؤشرات الحيوية الواعدة في التشخيص المبكر لتسمم الدم.

الهدف: مقارنة كلا من التحاليل الطبية مع العلامات السريرية لمعرفة أيهما أكثر دقة ويمكن استخدامه للتنبؤ بتسمم الدم في حديثي الولادة.

الحالات وطرق البحث: هذه الدراسة هي دراسة مقطعية مقارنة، أجريت بالتعاون بين كلية الدراسات العليا، جامعة عين شمس، المركز القومي للبحوث. لقد أجريت هذه الدراسة على عدد 90 حديثي ولادة في الفترة من 2018-2019 في وحدات الرعاية المركزة للمبتسرين (الحضانات) في مستشفى الوراق المركزي (مستشفى حكومي) وقد خضعت كلتا المجموعتين إلى التاريخ المرضي يجب مراجعة تاريخ الأسرة والأمومة والحمل والولادة وبعد الولادة والتاريخ الاجتماعي وأيضا وزن الولادة ونوع الولادة (طبيعي أم قيصرى). أحداث الولادة والأمراض النسائية مثل: تمزق الأغشية المحيطة بالجنين لفترات طويلة وحمل الأمهات المحيطة بالولادة أو العدوى المستمرة. الإنعاش عند الولادة بحقيقية أو أنبوب أميو، تعرض الجنين لأي مضاعفات أثناء الولادة.

الفحص الإكلينيكي: فحص إكلينيكي شامل لأستبعاد العيوب الخلقية، وفحوصات معملية تشمل نظام تسجيل للمعين للدم HSS، وفحوصات معملية أخرى (صورة دم- البروتين النفاعلى - SAA - بريسين).

النتائج: ارتفاع HSS بشكل ملحوظ في مجموعة المرضى عن المجموعة الضابطة وكذلك في مجموعة المرضى بعد ٧٢ ساعة من احتجازهم في الحضانات (المحضن)، وكان كل من بريسين و SAA مفيدا في تشخيص تسمم الدم كما هو مبين في الفروق ذات دلالة إحصائية بين الحالات والمجموعة الضابطة. العلامات السريرية كانت ذات دلالة إحصائية في مجموعة المرضى بعد ٧٢ ساعة من احتجازهم في الحضانات (المحضن) ولكنها لم تكن ذات قيمة في بداية التسمم حيث فقدت نسبة من الأطفال المصابة.

الخلاصة: بريسين و SAA أكثر دقة وكفاءة في التنبؤ بتسمم الدم في حديثي الولادة عن العلامات السريرية.

الكلمات المفتاحية: بريسين - SAA - الألتهاب - تسمم الدم.

Introduction:

Sepsis, has been considered as a worldwide public health hazard and its defined as a life- threatening organ dysfunction resulting from the host reaction to infection, Neonatal sepsis has several other definitions most common one is, it a systemic inflammatory response that mainly results from bacterial infection in the first month of life (Singer et.al., 2016). In 2014 in Eastern Mediterranean region (EMR) aimed to compare between countries with consideration of the similarities in the geographical location, tradition and culture, Data that were qualified to neonatal mortality (NM) were collected and categorized into social, economic, demographic and perinatal health care (WHO; World Health Statistics., 2015). That's confirmed what said that Egypt, incidence of neonatal sepsis in at risk neonates was 59% in the study of Elwan and Zarouk (2009). Simply neonatal sepsis diagnosis can be divided into clinical and laboratory diagnosis and because the initial diagnosis of sepsis is, by necessity, a clinical one, it is crucial to begin treatment before the results of cultures are available. Clinical signs and symptoms of sepsis are nonspecific, and the differential diagnosis is broad. (Shane et.al., 2017). Early diagnosis of neonatal sepsis gets better prognosis by discovering novel biomarkers become essential (Oeser et.al., 2020). Therefore, a single biomarker is not adequately dependable for diagnosis of neonatal sepsis; so it is necessary to combine different biomarkers to reach conclusions. Two of the most recently discovered biomarkers are Serum Amyloid A (SAA) and Presepsin (Ahmadizar et.al., 2017). Serum amyloid A (SAA) group of polymorphic apolipoproteins, also an acute phase reactant which mainly produced by the liver, have been proposed as a new diagnostic marker of bacterial infection. SAA was shown as a helpful biomarker for the diagnosis and treatment of acute diseases (bacterial, viral, traumatic...) and neonatal sepsis (Özkan et.al., 2019). Presepsin or soluble CD14 subtype, is a trunked portion of soluble CD14, which is released by shedding from the surface of various immune cell lines, such as macrophages, monocytes, and neutrophils, after its stimulation by pathogens, presepsin has recently been demonstrated to be a reliable diagnostic and prognostic marker of sepsis, distinguishing it from non-infectious diseases and the arrangement into severity degrees (Pizzolato et.al., 2014).

Aim:

To investigate the role of presepsin and SAA as simple applicable tests for early prediction of newborn suspected to sepsis against sepsis scoring system.

Ethical Consideration:

The current study was approved by ethical committee of both faculty of Postgraduate Childhood Studies, Ain Shams University and National Research Center, then informed written consent was obtained from the parents after explanation of the aim of the study and its possible benefits for early diagnosis by new markers instead of classic laboratory method.

Subjects& Methods:

In collaboration with faculty of Postgraduate Childhood Studies, This

(Study Of Serum Presepsin And Amyloid-A ...)

case control study was carried out at the neonatal intensive care unit (NICU) in both 6 October Insurance Hospital and El- Warrak Central Hospital (governmental), Ain Shams University from June 2017 to May 2018. The study was conducted on 90 neonates with gestational age ≥ 34 weeks. From which, 60 newborns with suspicion of early onset sepsis either clinically or laboratory with Griffin Neonatal Sepsis Score, considered as patient group and 30 apparently healthy newborns were chosen as controls.

⊠ Inclusion Criteria: The maternal criteria included intrapartum fever, urinary tract infection, premature rupture of membrane (PROM) (>8 h). Sepsis screen was done in neonates with presence of more than or equal to two risk factors regardless mode of delivery, number or sex. Sepsis was diagnosed by Griffin Neonatal Sepsis Score or either clinically by Tollner clinical sepsis score (Tollner, 1982) or labrotrary by Hematological sepsis score (HSS) (Rodwell et.al., 1988) in which Total WBC: $\leq 5000/ \text{mm}^3$, Total PMN count: $\leq 7800- 14500$ cells/ mm^3 Immature PMN count: ≥ 1440 at first 60h, Immature/ Mature Polymorph: ≥ 0.3 Immature/ Total WBC: ≥ 0.2 Degenerative changes of WBC: vacuolization, toxic granulation& Dohle bodiesm Platelet count: $< 150.000/ \text{mm}^3$. Total score is 7, Score ≥ 3 suggestive of sepsis. While clinical scoring System Total score 7, Score > 2 suggestive of sepsis. (Tollner, 1982).

Date Of Examination	Score	D1	D2	D3	D4	D4	D5	D6
Apnea, retraction, grunting, cyanosis	1							
Brady, tachycardia, hypotension, poor perfusion	1							
Seizures	1							
Abd- distension, puffed- residual	1							
Irritability, lethargy, poor fed	1							
Hepatomegly, Splenomegly	1							
Hyperthermia Or Hypothermia	1							
Total Score	7							

⊠ Exclusion Criteria: Neonates with traumatic tissue injury, laboratory findings suggestive of inborn errors of metabolism and congenital anomalies, history of perinatal and postnatal asphyxia.

Statistical analysis:

All statistical analysis was performed using statistical software SPSS (Statistical Package for Social Science) statistical program (version 16.0). Graphs were done using SPSS statistical program (version 16.0) and Microsoft Excel program (version 2016).

Results:

Table (1) Comparison between patients and controls as regards clinical and laboratory data (on admission or D1).

		Groups		P- Value
		Patients N= 60	Controls N= 30	
Clinical Score	< 2	41 (68.30%)	30 (100%)	0.001
	> 2	19.00 (31.70%)	0 (0.00100%)	
HSS	< 3	47 (78.3%)	30 (100.0%)	0.015 *
	> 3	13 (21.7%)	0 (0.0%)	
PRES	86.26 ± 32.74	36.83 ± 9.86	0.001 **	
SAA	213.38 ± 55.89	117.91 ± 24.14	0.001 **	

⊠ Clinical Scoring System after 72 hours: Comparison between patients