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Role of Consanguinity in Mental Retardation

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Abstract
Introduction: *Intellectual disability is defined as a disability characterized by significant limitations in both inte llectual functioning and in adaptive behavior. Mental retardation can be caused by a range of environmental an d genetic factors that lead to a combination of cognitive and social impairments. In Indian culture, consanguine ous marriages are more common, may be due to various customs, traditions, beliefs, the desire to preserve famil y property and to maintain relationships etc., In children with mental retardation, role of consanguinity among parents is debatable.*
Aim: *To find the correlation between consanguinity and mental retardation.*
Methodology: *A retrospective study was done at Government Hospital for Mental Care, Visakhapatnam over a period of one year where 421 patients diagnosed with mental retardation as per ICD 10 criteria were included i n the study.*
Results: *Of 421 patients, 274 were males and 147 were females. Among 135 patients in consanguineous group, 38.51% (52), 32.59% (44), 19.25% (26) and 9.6% (13) had mild, moderate, severe and profound MR respectivel y while among 286 patients in non consanguineous group, 51% (146), 28% (80), 12% (35) and 8% (25) had mil d, moderate, severe and profound MR respectively. Statistically no significant relation was observed between co nsanguinity and mental retardation.*
Conclusion: *The causal relation of consanguinity with mental retardation could not be established.*
Key words: consanguinity, mental retardation

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I. Introduction

Intellectual disability, formerly known as mental retardation, has an overall general population prevalen ce of approximately 1%, and prevalence rates vary by age. Prevalence of severe intellectual disability is approxi mately 6 per 1000[1]. The American Association on Intellectual and Developmental Disability[2] (AAIDD) defines intellectual disability as a disability characterized by significant limitations in both intellectual functioning and i n adaptive behavior that emerges before the age of 18 years. Mental retardation results from brain dysfunction, g enerally due to abnormal brain development or brain injury resulting from genetic and environmental causes. Fo r genetic and congenital disorders consanguinity was considered to play an important role. In Indian culture, con sanguineous marriages are more common, may be due to various customs, traditions, beliefs, the desire to preser ve family property and to maintain relationships etc., In children with mental retardation, role of consanguinity a mong parents is debatable.

In the past several studies were conducted to establish the role consanguinity in mental retardation. Stu dies done by Omar Ali Nafi et al[3], Rajach Sharkia et al[4], could not find any association between consanguinity a nd mental retardation whereas, the study done by T.Madhavan et al[5], showed a significant association between consanguinity and mental retardation. Very few studies were done in India regarding role of consanguinity in m ental retardation. The present study was done to determine the role of consanguinity in mental retardation.

II. Methodology

Patients diagnosed with mental retardation as per ICD 10 criteria were included in the study. Data from the medical records of the mentally retarded patients who attended the Government Hospital for Mental care, V isakhapatnam for a period of one year (September 2016-september 2017) was collected retrospectively. As a res ult, 421 patient records were retrieved and the data was taken. Data includes demographic details, family history of psychiatric illness, consanguinous marriage among parents. The results were compared using pearson chisqu are test with $p<0.05$ being significant.

III. Results

Totally 421 patients were taken into the study. Of these 274 were males and 147 were females. In the st udy population, family history of any mental illness was present in 44 patients and of these, 36 had family histor y of mental retardation. Consanguineous marriage among the parents was present in 135 patients ("C" group) w hile the parents of remaining 286 patients have a non consanguineous marriage ("NC" group).

In the study population, 198(47%), 124(29.4%), 61(14.4%) and 38(9%) had mild, moderate, severe and profound mental retardation respectively. As shown in the table 1, it is evident that proportion of male patients i s more in the study population and also among sub-divisions of MR. Among 36 patients with family history of mental retardation, 20, 10, 4 and 2 patients had mild, moderate, severe and profound mental retardation respecti vely. Among 135 patients in C group, 52, 44, 26 and 13 had mild, moderate, severe and profound mental retarda tion respectively.

Among 135 patients in C group, family history of mental retardation was present in 16 patients. Of thes e 16, 3 had no siblings and the history of MR was present in other family members. 13 out of these 16 patients, had siblings who were also mentally retarded. Among these 13 patients, 7 had mild to moderate MR while 6 had severe to profound MR.

From the table 2, it was observed that the relation between consanguinity and the mental retardation wa s statistically not significant (p value=0.074). Also, there is no significant relation between consanguinity and se verity of mental retardation.

Table 1: various characteristics of the patients in the study population

Patient characteristics	Total (n=421)
Gender	
Males	274 (65.08%)
Females	147 (34.9%)
Family history of MR	36
Marriage	
Consanguineous	135 (32%)
Non-consanguineous	286 (67.9%)

Table 2: consanguinity versus severity of MR

Marriage	Mild (198)	Moderate (124)	Severe (61)	Profound (38)	Total (n=421)	P value
Consanguineous	52	44	26	13	135 (32%)	0.074
Non-consanguineous	146	80	35	25	286 (67.9%)	

IV. Discussion

Mental retardation is prevalent in the society the causes may be of perinatal, genetic, environmental or of unknown causes. Consanguinity is known to cause many genetic abnormalities, increased inheritance of autos omal recessive disorders etc., in the offspring. But, consanguinity as a cause of mental retardation is still debatab le. Consanguinity is still prevalent in India because of various reasons more so in rural parts of India. This study is done at a tertiary care hospital, Visakhapatnam, where patients from surrounding rural areas attend the hospita l for medical help. This study is done with an intention to know the relation of consanguinity in mental retardati on.

From the results it is clear that males constitute 65% of the study population. The male preponderance observed in this study is similar to that reported in the DSM 5[1]. Mild MR was observed in 44%, moderate MR in 29.4%, severe MR in 14.4% and profound MR in 9% of the study population. This finding of higher prevalence of severe and profound MR in the present study than that reported in the literature[6] may be because of the study setting, hospital being a tertiary care and a referral centre. Almost one-third (32%) of the study population was t he result of consanguineous marriage among parents.

Among 135 patients in C group, 38.51% (52), 32.59% (44), 19.25% (26) and 9.6% (13) had mild, mod erate, severe and profound MR respectively while among 286 patients in NC group, 51% (146), 28% (80), 12% (35) and 8% (25) had mild, moderate, severe and profound MR respectively. This shows that there is increased i ncidence of MR in the C group and the severity of MR is more in C group than that of NC group. But, this findi ng is not statistically significant. So, we cannot conclude the causal relationship of consanguinity in MR.

There are few limitations in this study. The study being retrospective is a major one. The degree of con sanguinity, cause of mental retardation (perinatal, environmental etc.,) were not taken because of lack of sufficie nt data.

V. Conclusion

The causal relation of consanguinity with mental retardation could not be established. Further, prospect ive studies with large sample, considering the etiological factors of mental retardation, pedigree analysis, cytoge netic analysis if needed etc., were warranted to reliably establish the role of consanguinity in mental retardation.

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Table: various characteristics of the patients in the study population

Patient characteristics	Mild (198)	Moderate (124)	Severe (61)	Profound (38)	Total (n=421)
Gender					
Males	134	78	40	22	274 (65.08%)
Females	64	46	21	16	147 (34.9%)
Family history of MR	20	10	4	2	36
Marriage					
Consanguineous	52	44	26	13	135 (32%)
Non-consanguineous	146	80	35	25	286 (67.9%)

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