Poster ID 532

# CLINICAL SPECTRUM AND GENETIC VARIATIONS OF RETT SYNDROME

## Experienced From The Child Neurodevelopmental Centre of Tertiary Care Hospital of Bangladesh

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## Introduction

Rett syndrome is one kind of X linked neurodevelopmental disorder found among the female described by Andreas Rett which is presented as speech regression, stereotypic hand movement and gait abnormalities. Considering genetic abnormalities most cases associated with MECP2 gene mutation

Incidence: 1 in 10,000-15,000 of female live births

## Revised Diagnostic Criteria for Rett syndrome

**Required for typical or classic Rett**

- A period of regression followed by recovery or stabilization
- All main criteria and all exclusion criteria
- Supportive criteria

**Required for atypical or variant Rett**

- A period of regression followed by recovery or stabilization
- At least 2 of the 4 main criteria
- 5 out of 11 supportive criteria

## Clinical Stages of Presentation

It follows four(4) clinical stages of presentation

**Stage I**

• Early onset(subtle): Begins 6-12 months of age

**Stage II**

• Rapid deterioration: Between 1-4 years of age

**Stage III**

• Plateau phase: Begins 2-10 years of age

**Stage IV**

• Late motor deterioration, after age of 10 years

## Material & Methods

**Study Type:** Longitudinal Observational Study
**Study Place:** BSMMU, Dhaka Medical College
**Study Period:** 2015-2020 **Sample Size:** 25

Based on the revised diagnostic criteria a total 25 cases of Rett syndrome clinically observed including perinatal events and followed up for further three years to assess their functional status and co morbidities. All of the children were genetically assessed for common mutation related to Rett syndrome.

## Results

**Table 1: Baseline Demographic Characteristics of Studied Population**

| Baseline characteristics | Parameter | Number(%) |
|---|---|---|
| Sex | Female | 24(96) |
| | Male | 01(01) |
| Residence | Rural | 11(44) |
| | Urban | 14(56) |
| Socioeconomic Status | Middle(25,000-50,000/month) | 19(76) |
| | Higher(>50,000/month0 | 06(24) |
| H/O PNA | No | 20(80) |
| | Yes | 05(20) |
| Stages at Initial Visit | Stage 2 | 17(68) |
| | Stage 3 | 08(32) |
| OFC | -1SD | 20(80) |
| | -2SD | 05(20) |

**Table 2: Baseline Clinical Characteristics of Studied Population**

| Baseline Clinical Characteristics | mean±SD (months) |
|---|---|
| Age of Month of Visit | 57±20.37 |
| Age of onset | 35±6.22 |
| Gap between onset & presentation | 21.6±16 (4-72) |
| Age of speech regression | 36.2±9.34 |
| Age of loss of hand performance | 37.28±9.6 |
| Age of development of stereotype | 37±9.4 |
| Age of social withdrawal | 40.3±6 |
| Age of cognitive regression | 41±6 |

**Table 3: Co Morbid Condition of Studied Population**

| Co Morbid condition | Number(%) |
|---|---|
| Sleep problem | 17(68) |
| Breathing difficulty | 09(36) |
| Seizure | 12(48) |
| Dystonia | 08(32) |
| Muscle wasting | 11(44) |
| Deformity | 06(24) |
| Autonomic disturbances | 09(36) |

**Table 4: Laboratory findings of studied population**

| Test | Findings | Numbers(%) |
|---|---|---|
| Neuroimage (MRI changes) | Normal | 13(52) |
| | Atrophy | 11(44) |
| | Congenital Malformation | 01(4) |
| Electrophysiologic changes | Normal | 13(52) |
| | Needle Spike | 03(12) |
| | Focal | 02(8) |
| | Multifocal | 01(4) |
| | CSWS | 05(20) |

**Table 5: Types Of Genetic Mutation of Studied Population**

| Types of Genetic Mutation | Number(%) |
|---|---|
| MECP2 gene mutation | 15(60) |
| CDKL5 gene mutation | 01(04) |
| FOXG1 gene mutation | 01(04) |
| GABBR2 gene mutation | 01(04) |
| MECP2/ADNP gene mutation | 01(04) |
| Not identified | 06(24) |

**Figure 2 : Follow Up Assessment**

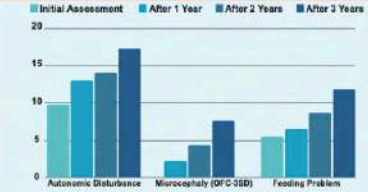
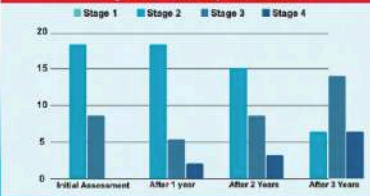



**Figure 2 : Follow Up Assessment**

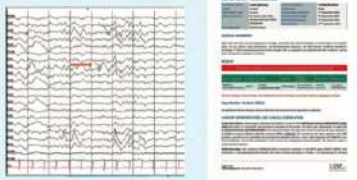



## Case 1

Saba is a 7 year old girl

- Speech regression
- Loss of hand performance
- Progressive microcephaly
- EEG: Needle spike
- MRI: Generalized cortical atrophy
- MECP2 Mutation

## EEG of Saba



## Discussion

Rett syndrome often misdiagnosed, so knowing the classical diagnostic features is important to initiate multidisciplinary management approach which may improve the quality of life. Life expectancy of an individual with Rett syndrome varied upon MECP2 mutation, they may survive up to middle age or longer. Recent year gene therapy targeted to MECP2 mutation named as Trofenitide become commercially available, and it shows significant improvement in behaviour.

## Conclusion

Gene therapy has the potential role to treat by restoring the production of MECP2 which is commercially available, so early identification of Rett syndrome based on clinical criteria and search of common genetic mutation will be beneficial for development of targeted therapy.

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