# Clinical-genotype Correlation Analysis in NF2 Focusing on Patient`s Functional Disability

Yu Teranishi MD; Satoru Miyawaki MD, PhD; Atushi Okano MD; Shunsaku Takayanagi MD, PhD; Hirofumi Nakatomi MD PhD; Nobuhito Saito MD, PhD

***Department of Neurosurgery, Faculty of Medicine, The University of Tokyo, Japan***

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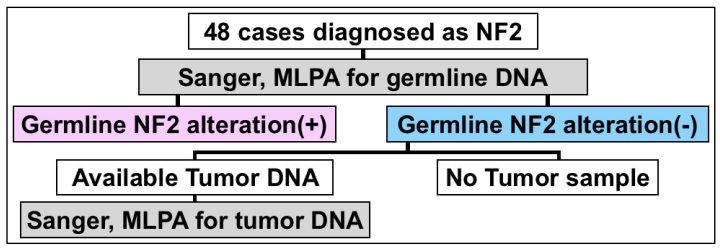
## *Introduction* Regardless of optimal treatment, clinical progression of neurofibromatosis type 2 (NF2) patients' deficit (particularly hearing, swallowing and gait) is irreversible(1). This study analyzes clinical-genotype correlation focusing on NF2 patient`s functional disability, and clarify the clinical and genetic predictors of functional disability.

## *Patients*

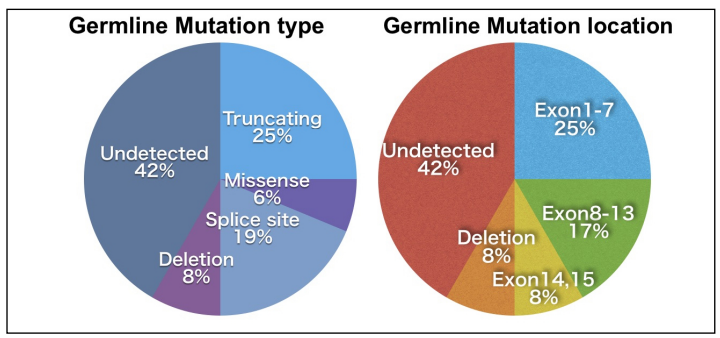
| | | |
|---|---|---|
| **Patients** | (n) | **48** |
| **Years of follow up** | (years; mean ± sd) | **15.0 ± 6.6** |
| **Family History of NF2 (+)** | (n) | **3** |
| **Vital Status:** | Alive (n) | **46** |
| **Sex:** | Male (n) | **19** |
| **Age at Diagnosis:** | (years; mean ± sd) | **23.4 ± 12.5** |

## *Genetic Analysis*

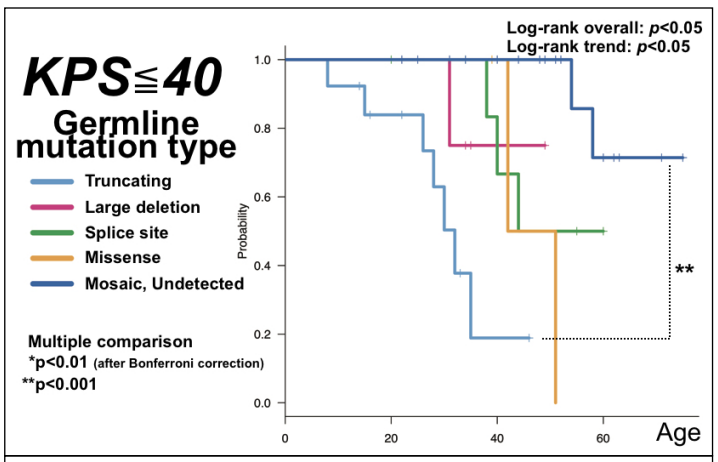


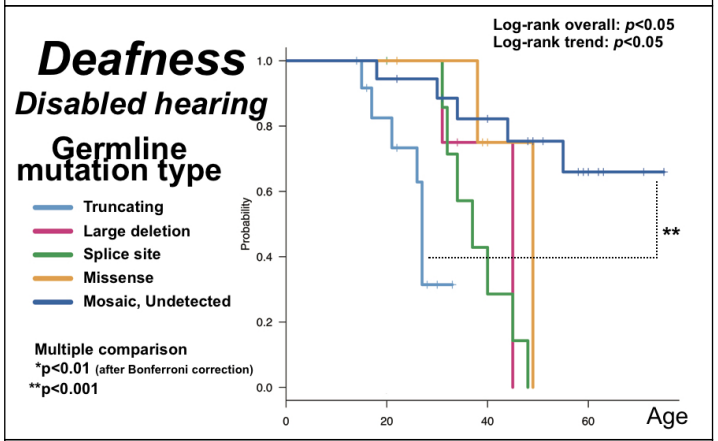

***Functional outcomes*** **including hearing, swallowing, and ambulation, was reviewed and scored using KPS and ADL.**

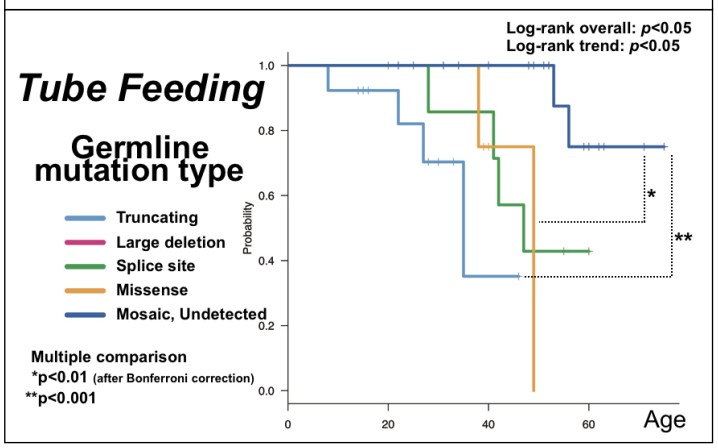
## *Result of Genetic Analysis*

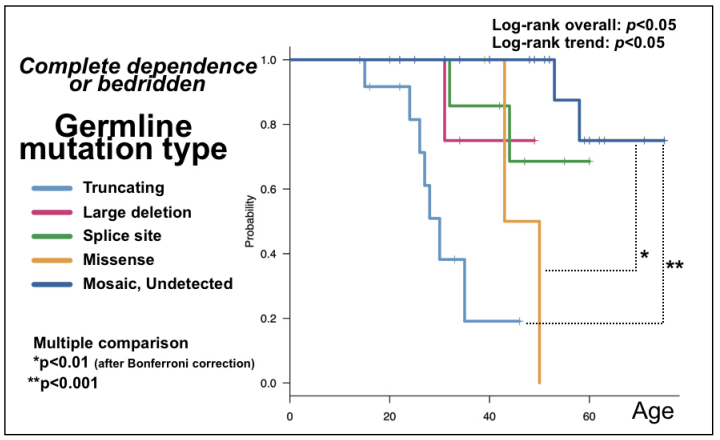



## *Kaplan-Meier curves by germline mutation type for Functional Outcomes*




## *Multi variate Cox proportional hazards model*

| | Clinical Genetic Factor | HR | 95%CI | *p value* |
|---|---|---|---|---|
| KPS≦40 | Truncating | 2.472 | 0.71-8.52 | 0.1517 |
| | Mosaic, Undetected | 0.07716 | 0.008-0.72 | 0.02522* |
| Deafness or Disabled hearing | Truncating | 4.242 | 1.13-15.92 | 0.0322* |
| | Mosaic, Undetected | 0.1167 | 0.03-0.43 | 0.001488* |
| | Onset age ≧25 | 0.1915 | 0.05-0.61 | 0.005528* |
| Tube feeding | Truncating | 15.64 | 1.67-146.5 | 0.01598* |
| | Onset age ≧25 | 0.2002 | 0.03-1.06 | 0.058676 |
| Complete dependence or bedridden | Truncating | 9.946 | 1.86-53.1 | 0.007189* |
| | Onset age ≧25 | 0.1733 | 0.03-0.909 | 0.03825* |
| | Onset symptom: hearing impairment | 0.1557 | 0.01-1.28 | 0.08401 |

## *Conclusions* Functional outcomes in NF2 patients are predictable by considering age at diagnosis NF2, and germline mutation of NF2 gene.

## *Discussion* To the moment, there is a limited number of studies that report clinical - genotype correlation as predictors of functional prognosis of NF2 patients(2,3). Through this study, it was established that the patients with "somatic mosaicism or undetected case" and "onset age?25" had clearly different functional prognosis compared to other NF2 patients.

**References** (1) Asthagiri AR et al. *Lancet*. 2009, (2) Hexter A et al. J Med Genet. 2015, (3) Plotkin SR et al. *Neurology*. 2013