

# Urological management in children with spina bifida who underwent neurosurgical intervention in infancy

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## Hypothesis / aims of study

Lower urinary tract dysfunction due to spina bifida is a condition that needs the urological management from birth. However, it is often difficult to assess lower urinary tract function in infancy. The purpose of this retrospective study was to investigate the appropriate urological management of lower urinary tract function for the children with spina bifida who underwent neurosurgical intervention in infancy.

## Study design, materials and methods

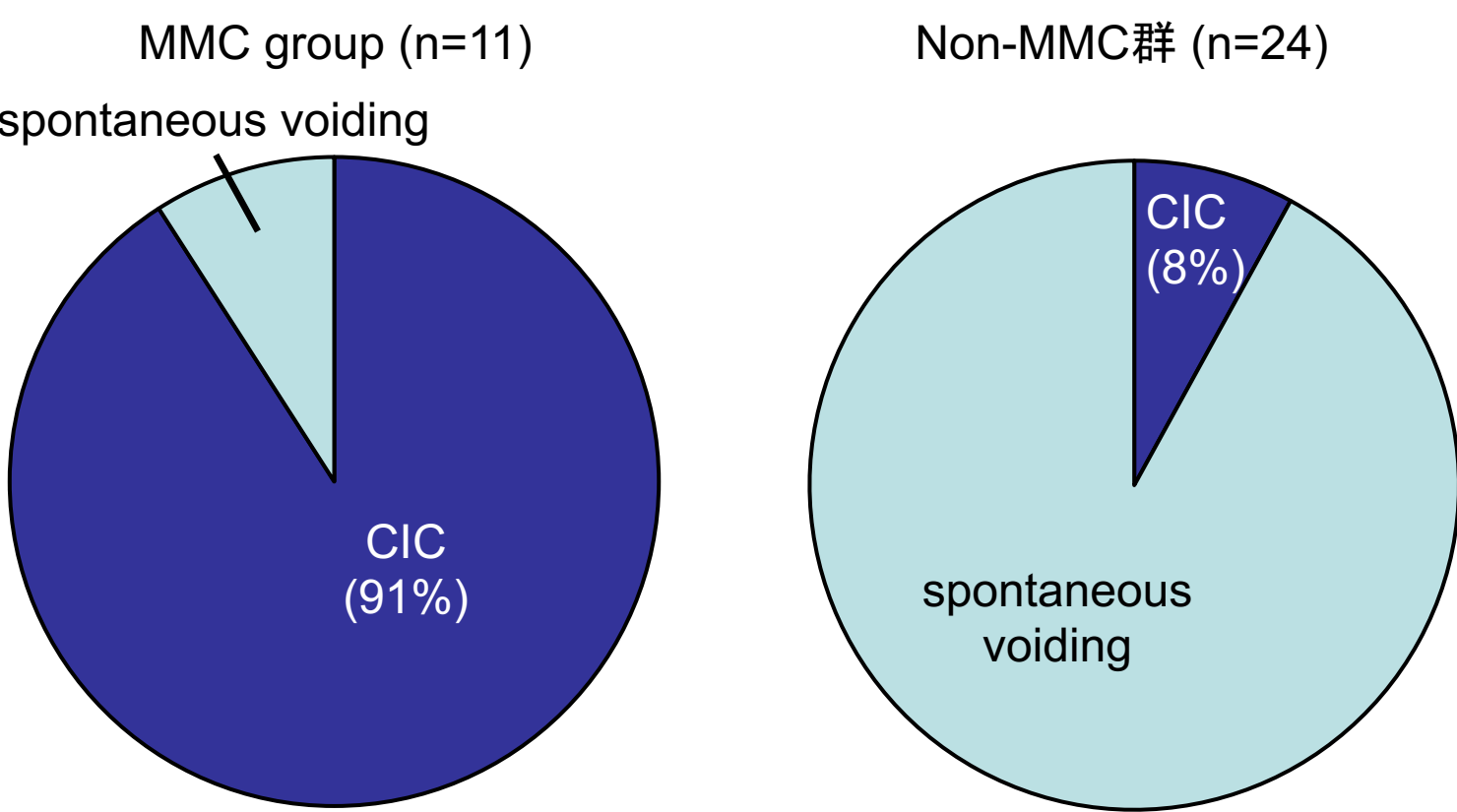
35 patients with spina bifida (16 boys and 19 girls), who underwent neurosurgical intervention under 1 year of age, and who referred to our department for the evaluation of lower urinary tract function between January 1, 2014, and December 31, 2023 were included.

## Results and interpretation

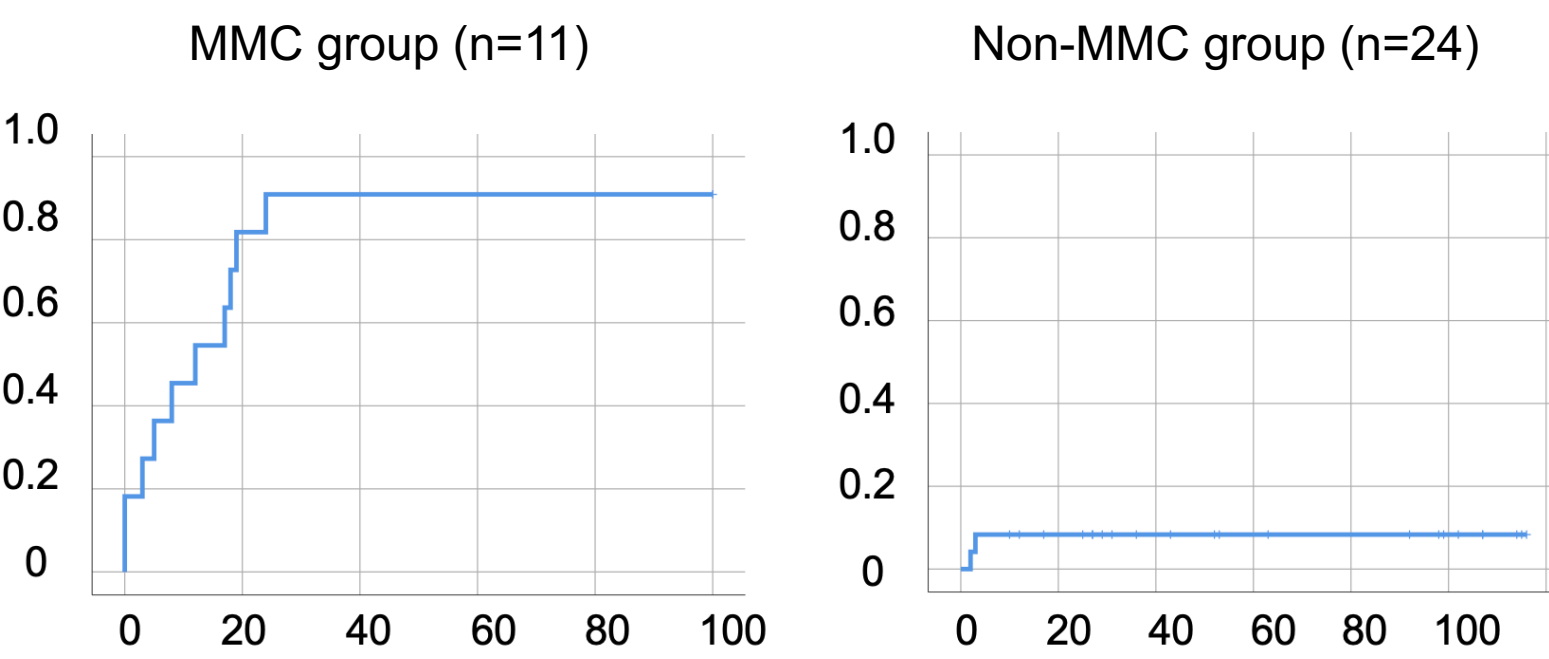
### Background

Myelomeningocele (MMC group)	11 cases
Non-Myelomeningocele (non-MMC group)	24 cases
Mean post-operative observation term	60 months

### Rate of introducing CIC



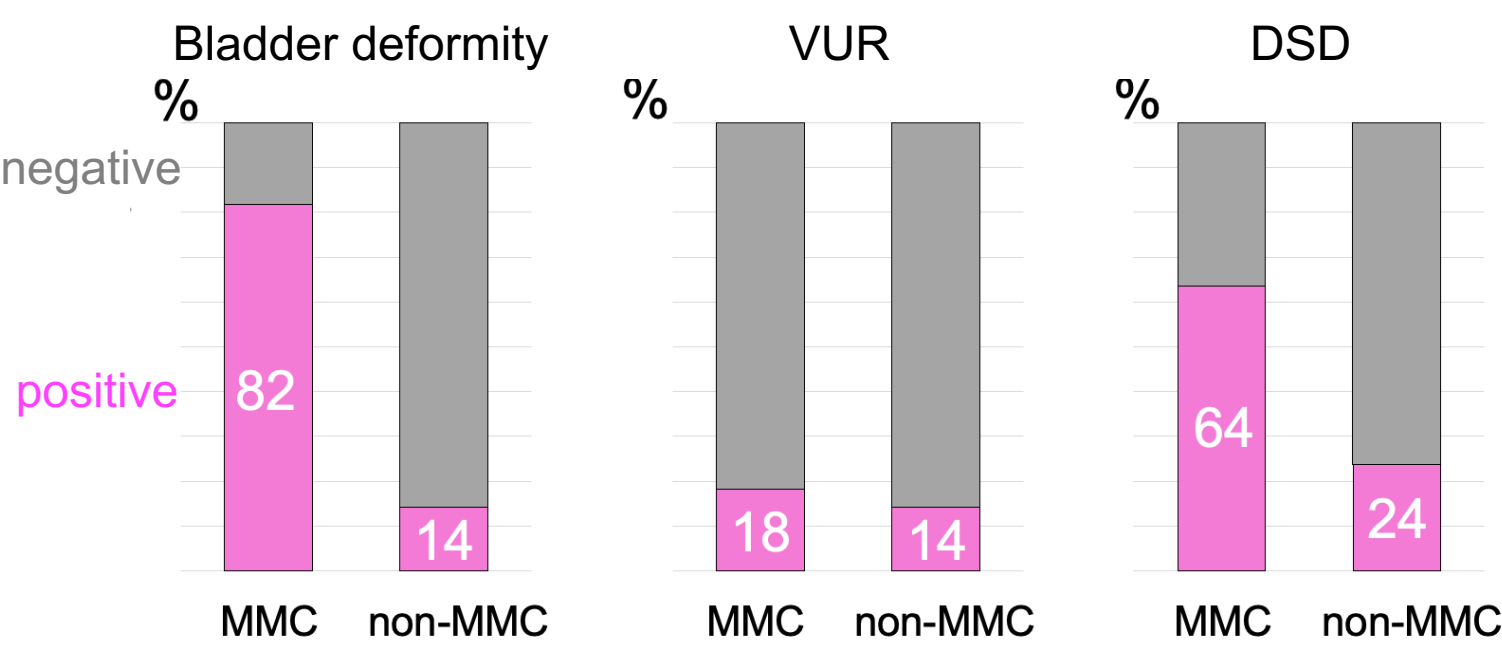
### Term of introducing CIC



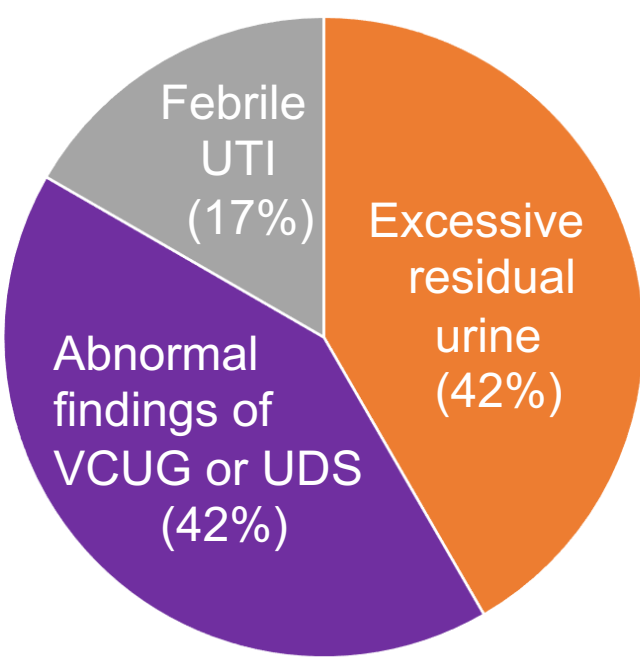
In the MMC group, CIC was introduced in more than 90% of cases.  
CIC was introduced until 24 months in those cases.  
In contrast, CIC was introduced in 8% of the non-MMC group.  
In those cases, CIC was introduced as early as 2-3 months of age.

## Results and interpretation

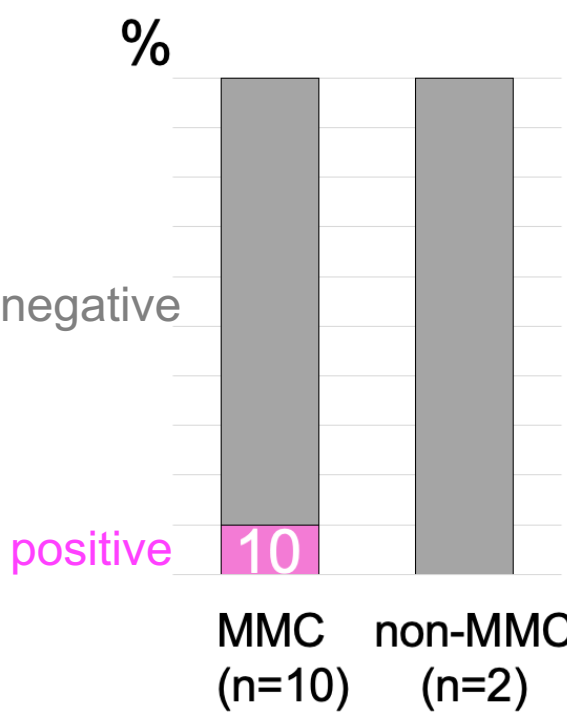
### Abnormal findings of initial VCUG



### Cause of introducing CIC



### Abnormal findings of ultrasonography



Abnormal findings on VCUG were shown in the MMC group.  
Among CIC cases, abnormal finding in the upper urinary tract on ultrasonography was shown in only one case with MMC.  
Most of the CIC cases had no abnormal findings in ultrasonography.

## Discussion

### Lower urinary tract management for neonate or infant spina bifida patients

Proactive management ・ ・ ・ immediately introduce CIC  
Expectant management ・ ・ ・ decide introducing CIC  
using ultrasonography findings

The term of introducing CIC (less than 1 y.o. v.s. more than 3 y.o.)  
The rate of presence VUR 10.0% v.s. 50.0%  
*NeuroRehabilitation* 42 (2018) 377–382

91% cases were introduced CIC until 2 years old.  
In 5 cases introduced CIC after 1year old,  
4 cases were identified febrile UTI or worsening findings of VCUG or UDS.

## Conclusions

Neural pathology of spina bifida (MMC or not) is one of the important factors in predicting prognosis of lower urinary tract function. Delayed introduction of CIC may cause progression of lower urinary tract deterioration (bladder deformity and VUR) especially with MMC. Accordingly, early evaluation by VCUG and UDS and introduction of CIC is recommended when suspected abnormal findings. Ultrasonographic examination as an evaluation may have limited power for screening of lower urinary tract function including the necessity for CIC or the presence of VUR.

## References

Application of clean intermittent catheterization for neurogenic bladder in infants less than 1 year old  
*Yanwei Li et al, NeuroRehabilitation. 2018;42(4):377-382.*

EAU/ESPU guidelines on the management of neurogenic bladder in children and adolescent part I diagnostics and conservative treatment  
*Raimund Stein et al, Neurourol Urodyn. 2020 Jan;39(1):45-57.*