



Introduction

- Aim: To detail the prevalence of immunity against measles and varicella in pediatric liver transplant patients.

Methods

- Retrospective review of 144 pediatric liver transplant recipients transplanted at UCLA between 2008-2017.
- 45 of these who had post-transplant measles and/or varicella titers measured were included in our study.
- Equivocal titers defined as negative for the purposes of our analysis.

Results

- 37 patients were tested for post-transplant measles immunity (table 1); 17 (46%) were immune. Risk factors for non-immunity:
 - ❖ Younger age at transplant ($p=0.02$)
 - ❖ Longer time interval since transplant ($p=0.04$)
 - ❖ Fewer administered vaccines ($p=0.01$)
- 41 patients were tested for post-transplant varicella immunity (table 2); 19 (46%) were immune. Risk factors for non-immunity:
 - ❖ Longer time interval since transplant ($p=0.01$)
- 31 patients were tested for varicella immunity both before and after transplant. Of the 18 patients who tested positive for pre-transplant immunity, 6 tested negative for post-transplant immunity.

Tables

Table 1: Post-transplant measles immune status

	Positive (n=17)	Negative (n=20)	p-value
Median age in years at transplant (range)	5.3 (0.6-17.3)	1.6 (0.3-17.8)	0.02
Median age in years at testing (range)	12.7 (4.4-26.0)	11.0 (3.7-24.2)	0.67
Median years from transplant to testing (range)	3.1 (1.0-10.5)	8.3 (1.7-11.3)	0.04
Male (%)	10 (59%)	16 (80%)	0.28
Number of documented vaccines			0.01
	0	3	14
	1	5	3
	2	9	3

Table 2: Post-transplant varicella immune status

	Positive (n=19)	Negative (n=22)	p-value
Median age in years at transplant (range)	4.6 (0.3-14.7)	1.8 (0.4-17.8)	0.28
Median age in years at testing (range)	7.6 (1.2-26.0)	11.0 (3.7-24.2)	0.25
Median years from transplant to testing (range)	3.1 (0.1-11.3)	8.4 (1.7-11.3)	0.01
Male (%)	12 (63%)	18 (82%)	0.29
Number of documented vaccines			0.31
	0	7	12
	1	4	6
	2	8	4

Discussion

- This is one of few single-center studies examining post-transplant measles and varicella immunity.
- There was a low prevalence of seropositivity, consistent with findings of Yoeli et al¹.
- Prevalence was low even compared to local and national estimates of seropositivity in the general population (through the NHANES sample²) which exceed 90%.
- We also describe a high rate of waning post-transplant immunity to varicella, which may in part be related to immunosuppression.
- Our findings suggest that pediatric liver transplant patients are at greater risk for contracting measles or varicella despite vaccination status; however, the validity of titers as an adequate measure of immunity remains unclear, and further study is needed to validate these results in larger multi-center cohorts.

References

- 1 Yoeli JK, Yoeli D, Miloh TA, Rana A, Goss JA, Munoz-Rivas F. Measles, mumps, rubella (vaccine) and varicella vaccines in pediatric liver transplant: An initial analysis of post-transplant immunity. *Pediatr Transplant.* 2019;23(5):e13490. doi:10.1111/ptr.13490
- 2 Kruszon-Moran D, Porter KS, McQuillan G, Billieux VG, Kim-Farley R, Hirsch R. Infectious disease prevalence in Los Angeles county--a comparison to national estimates, 1999-2004 birth rates for U.S. teenagers reach historic lows for all age and ethnic groups. *NCHS Data Brief.* 2012;(90):1-8.