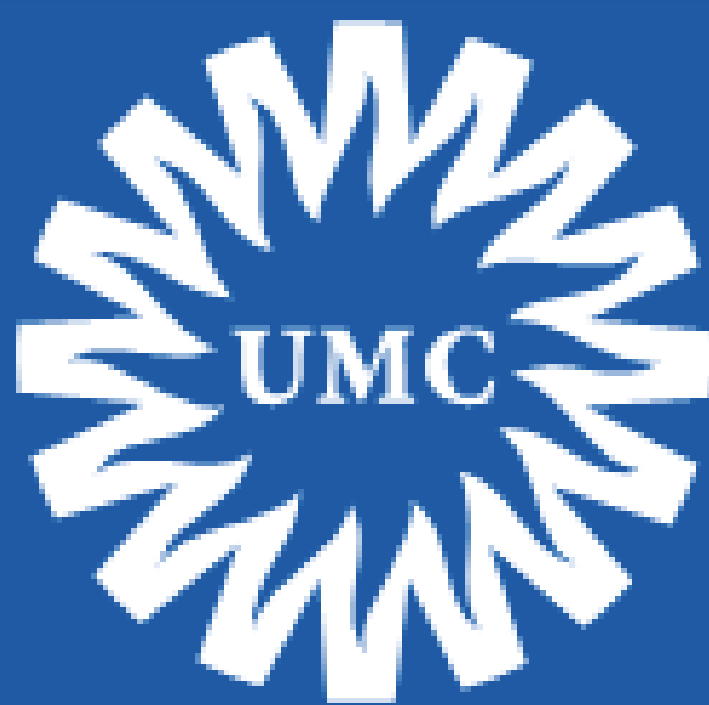


Pediatric Medulloblastomas Express Immune Checkpoint B7-H3



Shuang Li¹, Geke C. Poolen¹, Lars C. van Vliet¹, Jelle G. Schipper¹, Roel Broekhuizen¹, Wim Van Hecke¹, Jeroen F. Vermeulen¹, and Niels Bovenschen^{1,2*}

University Medical Center
Utrecht

¹Department of Pathology, University Medical Center Utrecht, Utrecht, 3584 CX, The Netherlands
²Center of Translational Immunology, University Medical Center Utrecht, Utrecht, 3584 CX, The Netherlands

Introduction

- 1. Medulloblastomas are highly malignant brain tumors that predominantly occur in young infants.
- 2. These tumors often relapse and appropriate treatment for these relapsed tumors is a huge clinical problem.
- 3. Immunotherapy to boost the immune system is emerging as a novel promising approach in clinical trials, but is often hampered by inhibitory immune receptors (immune checkpoints) on both immune cells and the tumor.

Aim of study

To identify immune checkpoint B7-H3 expression on pediatric medulloblastoma

Methods

we employed immunohistochemistry on whole tissue slides from the archive of the Department of Pathology at University Medical Center Utrecht.

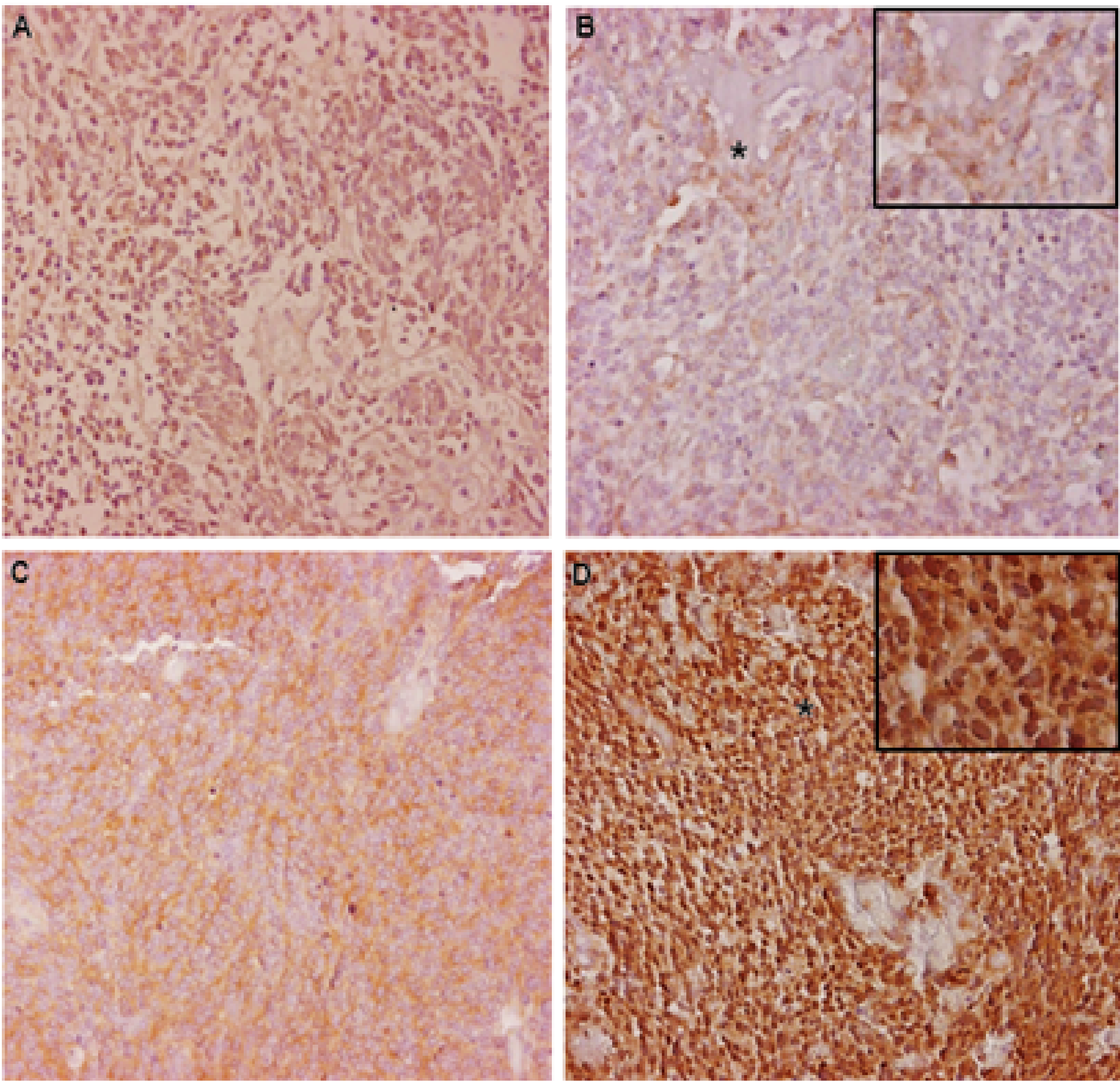
First, tumors were scored for B7-H3 staining intensity and separated in four categories: i) No membranous staining or any staining in <10% of cells (n=1), ii) Weak and partial membranous staining (n=10), iii) Moderate membranous staining (n=9), and iv) Intense membranous staining (n=4).

Second, we determined the percentage of B7-H3 positive tumor cells: <25 % (n=7), 25-50% (n=4), 50-75% (n=5), and >75% (n=8).

Patient characteristics

		N or value	%
Gender	Male	15	62.5
	Female	9	37.5
Age (years)	Mean ± SD	8.6 ± 5.2	
	Range	0.4 - 17.8	
Histological type	Classic	14	58.3
	Desmoplastic nodular	6	25.0
	Extensive nodular	3	12.5
	Anaplastic	1	4.2
Molecular classification	WNT	1	4.2
	SHH	7	29.2
	Group3	5	20.8
	Group4	8	33.3
	Undetermined	3	12.5
Qualitative score	3	4	16.7
	2	9	37.5
	1	10	41.7
	0	1	4.2
Semiquantitative grade	+++	8	33.3
	++	5	20.8
	+	4	16.7
	±	7	29.2

Expression of B7-H3 in pediatric medulloblastoma



A) B7-H3 expression scored with score 0 and grade 0. B) B7-H3 expression scored with score 1 and grade 1. C) B7-H3 expression scored with score 2 and grade 2. D) B7-H3 expression scored with score 3 and grade 3. *Area corresponding to the inset. Original magnification x20, insets x40.

Conclusions

- 1.B7-H3 protein expression was found in 23 out of 24 (96%) pediatric medulloblastoma cases.
- 2.B7-H3 protein was more frequently expressed on tumor cells of Group-4 medulloblastomas as compared with other molecular subtypes (p=0.02).
- 3.No correlations were found between B7-H3 protein expression and gender, molecular subtypes, and overall survival.