

# Retinal Imaging Study of Children (RISC) – first 153 children

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## Conclusion

Retinal hemorrhages (RHs) were rare, found in 6% of all children and were few in numbers. All clinical conditions related to RHs were identified, except in one case. Our results support previous reports that RHs due to trauma including abusive head trauma is distinguishable from other clinical conditions.

**Aim:** To explore the occurrence and patterns of retinal hemorrhages in children in various clinical conditions that are suggested to be differential diagnoses to abusive head trauma.

**Methods:** A Swedish prospective multicenter study including Stockholm, Gothenburg and Lund. Children are consecutively included for funduscopy and fundus photography.

**Future:** The RISC study is ongoing until 1000 children have been examined.

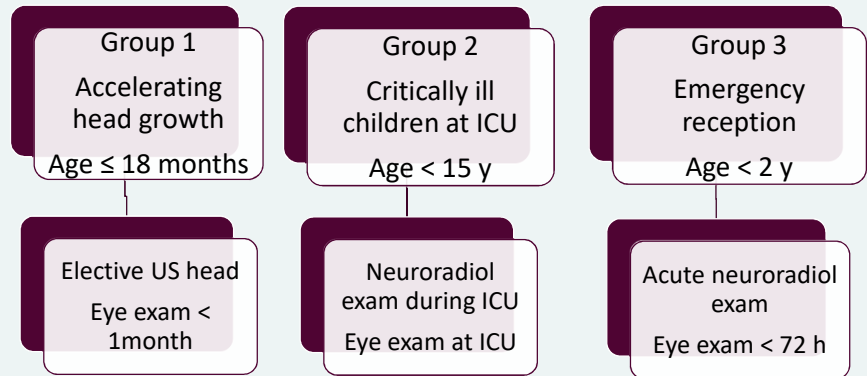


Table 1. Clinical conditions of the participants

Clinical condition	Subjects (n)	Subjects with RHs (n)	Max RHs per eye (n)	Age mean (range)
Accel head growth	43	0	0	5mo (0,5-11mo)
Skull fracture with intracranial hem	33	1 <sup>a</sup>	4	1y6mo (0,25mo -11y4mo)
Hydrocephalus/High ICP	13	0	0	3y4mo (0,5mo-13y3mo)
Witnessed trauma without skullfracture	6	1 <sup>b</sup>	4	4y10mo (4mo - 12y4mo)
Seizures	6	0	0	5mo (0,5-18mo)
CNS infection	9	1	1	5y (1mo - 13y4mo)
Sepsis	3	0	0	5y7mo (3mo-14y6mo)
Coagulopathy	2	1	TMTC	3 mo, 2 mo
Ruptured AVM and SAH	5	3	10	12y (8y10mo - 13y6mo)
Ruptured aneurysm and SAH	1	0	0	6y6mo
Tumor Cerebri	5	1 <sup>b</sup>	7	6y (2y4mo - 12y3mo)
Cerebral infarction	2	0	0	12y1mo, 12y6mo
Heart stop/post heart surgery	6	0	0	2y3mo (0,5mo - 12y10mo)
Suffocation	1	0	0	3y10mo
Sinus thrombosis	1	0	0	9y
Miscellaneous	6	0	0	2y (0,5mo -10y9mo)
Sudden esotropia/abd palsy	2	0	0	1y3mo, 1y3mo
IVH/germinal matrix hem	2	0	0	0,5mo, 1mo
Bruises	1	0	0	8mo
Unexplained low consciousness	6	1	3	2mo (0,5 - 4 mo)
<b>Total</b>	<b>153</b>	<b>9</b>		

RH=retinal hemorrhage, ICP=intracranial pressure, CNS=central nervous system, AVM=arteriovenous malformation, SAH=subarachnoid hemorrhage, IVH=intraventricular hemorrhage, TMTC=too many to count, y=years, mo=months, <sup>a</sup>=birth related RH, <sup>b</sup>=papilledema with peripapillary hemorrhage

Fig1. Severe coagulopathy due to Alagille syndr in 3 mo old boy. Too many to count, multilayered hemorrhages in one eye



Fig2. Ruptured AVM in 13y old girl. <10 intraretinal dot hemorrhages in both eyes

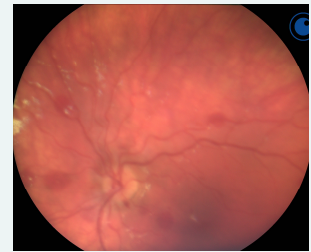


Fig3. Increased ICP due to tumor cerebri. Papilledema with few peripapillary flame hemorrhages



Fig4. Skull impression fracture due to fall. No retinal hemorrhages.



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