

## Extrauterine growth retardation and risk of retinopathy of prematurity (ROP)

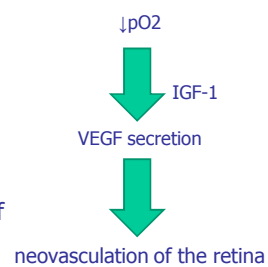
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## Introduction

IGF-1 promotes fetal and newborn growth and is required for angiogenesis of the retina

IGF-1 deficiency causes poor postnatal weight gain and increased risk of ROP



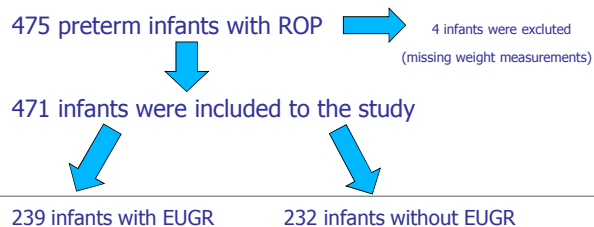
## Objective

- To assess the influence of EUGR on:
  - frequency of any stage of ROP
  - need of treatment (laser treatment, ranibizumab injections or cryotherapy)
  - effects of treatment (blindness frequency)



## Study population and methods

- Retrospective analysis of the medical records of preterm infants admitted to Neonatology Department between 2007 and 2014
  - Data presented as median (range) or number (%)
  - P value <0.05 statistically significant



### Characteristics of the study population

	Infants with EUGR N=239	Infants without EUGR N=232	P value
Sex/males	146 (61 %)	126 (54 %)	n.s.
Gestational age (weeks)	27 (23-36)	27 (22-36)	n.s.
<b>Birth weight (g)</b>	<b>880 (450-2520)</b>	<b>1005 (490-2620)</b>	<b>&lt;0,0001</b>
<b>SGA</b>	<b>43 (18 %)</b>	<b>2 (1 %)</b>	<b>&lt;0,0001</b>
<b>IMV (days)</b>	<b>27 (0-105)</b>	<b>18 (0-858)</b>	<b>&lt;0,005</b>
nCPAP (days)	8 (0-53)	8 (0-48)	n.s.
<b>Oxygen therapy (days)</b>	<b>59 (0-138)</b>	<b>50 (0-131)</b>	<b>0,0005</b>

### Characteristics of the study population

	Infants with EUGR N=239	Infants without EUGR N=232	P value
Bacterial sepsis	99 (43 %)	84 (38 %)	n.s.
Candida infection	9 (4 %)	6 (3 %)	n.s.
HCMV infection	29 (23 %)	21 (16 %)	n.s.
Asphyxia <4 AS	125 (53 %)	94 (42 %)	<b>0,02</b>
IVH	201 (84 %)	200 (86 %)	n.s.
PVL	23 (10 %)	27 (12 %)	n.s.
Erythropoietin	109 (49 %)	92 (42 %)	n.s.
No. of blood transfusion	5 (0-23)	4 (0-26)	n.s.
BPD	167 (72 %)	167 (74 %)	n.s.
Steroids iv.	92 (40 %)	73 (34 %)	n.s.
NEC	65 (28 %)	40 (18 %)	<b>0,008</b>
PDA	105 (46 %)	82 (36 %)	n.s.

### EUGR and the incidence of ROP

Type of ROP	EUGR Infants	Infants without EUGR	P- value	
All type 1	107 (45 %)	110 (48 %)	n.s.	
Type 1	<b>ROP in 1 zone and plus disease</b>	<b>63 (27 %)</b>	<b>40 (17 %)</b>	<b>0,016</b>
	<b>APROP</b>	<b>63 (27 %)</b>	<b>42 (18 %)</b>	<b>0,029</b>
	ROP stage 3 in 1 zone	29 (12 %)	41 (18 %)	n.s.
ROP stage 2 or 3 in 2 zone, plus disease	79 (34 %)	71 (31 %)	n.s.	
Type 2	66 (28 %)	77 (33 %)	n.s.	
ROP stage 4 or 5	2 (0,8 %)	1 (0,4 %)	n.s.	
<b>Plus disease</b>	<b>139 (59 %)</b>	<b>114 (49 %)</b>	<b>0,038</b>	

### Comparison of EUGR and non-EUGR infants in the day of first ophtalmic intervention

	Infants with EUGR N= 170	Infants without EUGR N=152	P value
Age (days)	71 (30-137)	61 (24-130)	<b>&lt;0,0001</b>
PMA (weeks)	37 (32-47)	36 (30-45)	<b>&lt;0,0001</b>
Weight (g)	1925 (631-4250)	2360 (1140-4230)	<b>&lt;0,0001</b>
Weight (percentyl by Fenton)	3 (0-24)	25 (10-100)	<b>&lt;0,0001</b>

### EUGR and the treatment of ROP

	Frequency (%) Infants with EUGR	Frequency (%) Infants without EUGR	Statistical significance (p<0,05)
Treated ROP	171 (72 %)	155 (67 %)	n.s.
Photocoagulations	146 (61 %)	134 (58 %)	n.s.
Ranibizumab injections	25 (10 %)	21 (9 %)	n.s.
Re-operations	0 (0-4)	0 (0-4)	n.s.
<b>Blindness</b>	<b>15 (9 %)</b>	<b>5 (3 %)</b>	<b>0,02</b>

- ### Conclusions
- EUGR increases risk of the **severe stages** of ROP (APROP, ROP of zone 1 with plus disease)
  - EUGR increases risk of the **blindness** in infants with ROP
  - Prevention of EUGR by adequate nutrition might decreased the risk of unfavorable outcomes of ROP
  - Postnatal weight gain analysis might be simply and useful diagnostic tool for prediction of severity of ROP
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