Early life exposures as risk factors for eosinophilic gastrointestinal diseases: A pilot study from an online patient-centered research network

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Introduction

- Early life exposures, including in the antenatal and perinatal periods and in the first year of life, have been shown to increase risk of development of eosinophilic esophagitis (EoE).
- It is unknown whether similar exposures are associated with development of the non-EoE eosinophilic gastrointestinal diseases (EGIDs).
- We aimed to assess the association between prenatal, antenatal, and early life factors and development of non-EoE EGIDs.

Methods

- **Study design:** Case-control pilot study based in EGID Partners (egidpartners.org), an online patient-centered research network designed and implemented by patient advocacy groups (PAGs) and EGID researchers and launched in 2020 (Figure 1).
- **Subjects:** Recruited via emails and social media, directed messages to EGID patients through medical record patient portals, webinars, and by physicians. Adults (≥18 years) with EGIDs, non-EGID adult controls, and these same groups but for caregivers of children <18 years of age could join.
- **Data:** Subjects completed surveys on demographics, disease and medical history, and early life exposures, using our Early Life Exposure Questionnaire. This was previously developed and includes detailed questions of maternal and child exposures.
- **Analysis:** We estimated the adjusted odds of having an EGID in relation to early life exposures, focusing on exposures previously evaluated in association with EoE.

Results

- We analyzed 61 non-EoE EGID patients (mean (SD) age 29 (19) years; 67% female; 95% white; 89% with an atopic condition; mean (SD) 7.4 (9.8) years of symptoms prior to diagnosis) and 20 controls (mean age 38 (13); 60% female; 90% white; 85% atopy).
- For EGIDs, 14 had eosinophilic gastritis (EoG), 19 had eosinophilic enteritis (EoN), 6 had eosinophilic colitis (EoC), and 22 had multiple areas of overlap; additionally, 30 had esophageal involvement.

Figure 1: EGID Partners website

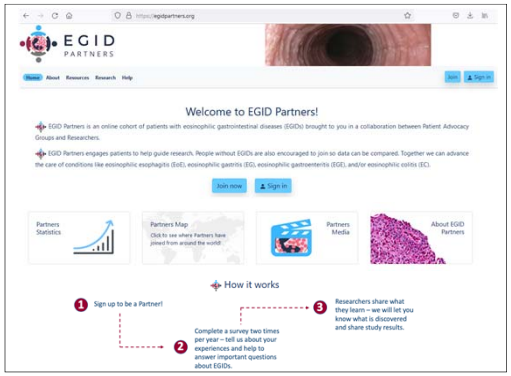

Table 1: Early life exposures in non-EoE EGIDs

	Control (n = 20)	Any non-EoE EGID (n = 61)	p*
Maternal fever			0.85
Yes	1 (5)	4 (7)	
No	10 (50)	32 (52)	
Don't know	9 (45)	25 (41)	
Maternal smoking			0.29
Yes	2 (10)	13 (21)	
No	16 (80)	45 (74)	
Don't know	2 (10)	3 (5)	
Prenatal vitamins			0.16
Yes	9 (45)	31 (51)	
No	0 (0)	7 (12)	
Don't know	11 (55)	23 (38)	
Folic acid			0.27
Yes	2 (10)	17 (28)	
No	5 (25)	16 (26)	
Don't know	13 (65)	28 (46)	
Pregnancy complications**			0.02
Yes	3 (15)	26 (43)	
No	17 (85)	33 (54)	
Don't know	0 (0)	2 (3)	
Preterm labor			0.14
Yes	0 (0)	6 (10)	
No	20 (100)	53 (87)	
Don't know	0 (0)	2 (3)	
Cesarean delivery			0.87
Yes	4 (20)	11 (18)	
No	16 (80)	49 (80)	
Don't know	0 (0)	1 (2)	
Preterm birth			0.11
Yes	0 (0)	7 (11)	
No	19 (95)	49 (80)	
Don't know	1 (5)	5 (8)	
NICU admission			0.03
Yes	0 (0)	12 (20)	
No	20 (100)	49 (80)	
Don't know	0 (0)	0 (0)	
Breastfeeding			0.92
Yes	12 (60)	34 (56)	
No	7 (35)	21 (34)	
Don't know	1 (5)	6 (10)	
Antibiotics			0.01
Yes	2 (10)	26 (43)	
No	8 (40)	15 (35)	
Don't know	10 (50)	20 (33)	
Acid suppressants			0.07
Yes	1 (5)	13 (21)	
No	14 (70)	30 (49)	
Don't know	5 (25)	18 (30)	
Furred pets			0.40
Yes	11 (55)	34 (56)	
No	9 (45)	27 (44)	
Don't know	0 (0)	0 (0)	

* p value excludes "Don't know"
** Pregnancy complications include gestational diabetes, anemia, pre-eclampsia or pregnancy-induced hypertension, eclampsia, chorioamnionitis, HELLP syndrome, hyperemesis, preterm labor, premature rupture of the membranes, or other complication

- Relative to controls, EGID patients were more likely to have had antenatal/perinatal pregnancy-related complications (43% vs 13%; p=0.02), NICU admission (20% vs 0%; p=0.03), and antibiotics in infancy (43% vs 10%; p=0.01) (Table 1).
- After adjusting for age at diagnosis, increased odds of an EGID persisted for pregnancy complications (aOR 3.83; 95% CI: 0.99-14.9) and antibiotic use in infancy (aOR 7.65; 95% CI: 1.28-45.7).

Conclusions

- We identified preliminary associations between certain early life factors and non-EoE EGIDs, including pregnancy complications, NICU admission, and antibiotics in infancy.
- While confirmation of these results in a larger sample size is needed, this will be possible as the EGID Partners cohort continues to accrue.
- Future investigations into the role of early life exposures in development of non-esophageal EGID pathogenesis and its overlap with EoE is warranted

References

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