Incidence of Eosinophilic Esophagitis in Marshfield Epidemiological Study Area (MESA)

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Research Goal

- The main purpose of the study is to estimate the **incidence** of Eosinophilic Esophagitis (EE) in MESA and to describe the **demographic** features of patients diagnosed with EE.

Specific Aims

- **Primary aims:**

1. To estimate the **incidence** of EE in MESA population

2. To observe the **trends** of EE between 1995-1997 & 2005-2007.

Specific Aims

Secondary Aims:

1. To estimate the **prevalence** of Atopic dermatitis in subjects with EE.

2. To **describe the demographic features** of patients diagnosed with EE

3. To evaluate the **temporal relationship** between onset of atopic dermatitis (AD) and diagnosis of EE.

Background

- **General:**

  Subgroup of GERD patients with increased esophageal eosinophilia **resistant** to medical and surgical treatment

- Last decade: A new disease entity distinct from GERD described
- **Other names:** Allergic eosinophilic esophagitis / primary eosinophilic esophagitis/ idiopathic eosinophilic esophagitis.
- The prevalence of EE is gradually increasing due to chronic nature of the disease and very low mortality

Diagnostic criteria for EE

- **First international Gastrointestinal Eosinophilic research symposium**

1. Symptoms including but not restricted to food impaction and dysphagia in adults, and feeding intolerance and GERD symptoms in children

2. >= 15 eosinophils/HPF in biopsy specimens

3.Normal gastric and duodenal biopsies

4. patients must have biopsies after 6-8 wk of twice daily acid suppression with PPI OR have documented negative PH study.

Risk factors

- Male gender (M:F= 2.4 to 3:1)
- White race
- Personal or familial predisposition to aeroallergens or food antigens

Significance of EE

- Unrecognized and inadequate treatment can lead to significant morbidity like severe dysphagia, food impaction and recurrent vomiting

- Population based studies in both adults and children demonstrated increasing incidence and prevalence of EE.

Association of EE and AD

- As high as 10-20% in children and 1-3% of adults in general population
- Australian study with a cohort of 46 children with EE has projected higher prevalence of AD in EE (55.6%), in in comparison to that in local population (32.3%)
- While some others have refuted higher prevalence

Significance of the study

- No population based studies from USA to estimate prevalence and incidence of EE.

- Retrospective study done in Pediatric population in Hamilton County, Ohio showed increased **prevalence** from 9.9/100000 in 2000 to 12.3/100000 in 2003.
- Similar increase in **incidence** from 9.1 to 12.3/100000
- Prospective study in Switzerland also demonstrated marked increase in incidence and prevalence.

Significance of the study

- Since the pathogenesis of EE is similar in both adults and children, estimating the prevalence and incidence in whole population is appropriate.

- To the best of our knowledge, this study is the first to include both children and adults in estimating the incidence of EE in general population

Research design, methods and results

A) Study design:

Retrospective cohort study, as EE is not a common disorder.

B) Study Subjects: The study population is from the MESA.

24 ZIP code areas in central and northern wisconsin

14 around city of Marshfield near clinic's main campus / **10** near Clinics regional centers

Nearly all receive their care in clinic system.

The population is largely Caucasian

1.Case Identification and validation

- There are **NO** universal diagnostic criteria for EE
- We felt it is difficult to use EE Consensus diagnostic criteria for our study as our study is retrospective
- Any subject presenting with any of the esophageal symptoms with or without characteristic endoscopic findings and meeting the histologic criteria are considered as a case of EE.

2.Histologic criteria for Dx of EE

- At least 15 intraepithelial eosinophils/ HPF
- Predominance of eosinophils at superficial (Luminal) one half of squamous epithelium and eosinophil count >=10/hpf
- Intraepithelial eosinophilic micro-abscess (cluster of at least 4 eosinophils)

3.Exclusion Criteria

- Cases of esophagitis due to chemicals, drugs, Candida and viral infections
- Endoscopic or histologic evidence of ulceration of esophageal mucosa
- Inflammatory bowel disorders, eosinophilic gastroenteritis, celiac disease, and primary and secondary structural abnormalities of esophagus
- Presence of neutrophilic infiltrates confirmed with slide review by pathologist

4.Inclusion of subjects

- Subject should be a MESA resident during the study period
- One or more of inclusion criterion
- None of the exclusion criterion

Research design, methods and results contd…

- Since EE is a relatively a new disease, it is possible that cases might have been mislabeled during 1995-97.

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- For better detection we screened all esophageal biopsy reports in SNOMED (Systematized nomenclature of Medicine) data base during the study period. **(396)**
- SNOMED - Computerized registry of tissue examinations carried out in Marshfield

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SNOMED/MESA Database: all esophageal biopsy reports of subjects who lived in MESA area at the time of biopsy were reviewed.

Research design, methods and results contd…

- Review of EGD procedure note is done to determine the number, site of biopsy, and macroscopic changes observable by the endoscopist.

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- Cases of esophagitis which are meeting any of the exclusion criterion are removed from the study **(18)**

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- Pathologist reviewed the tissue specimens of those HP reports in which EE cannot be ruled out and those with features suggestive of EE **(378)**
- The pathologist recorded all relevant data in histopathologic abstract form.

Research design, methods and results contd…

- **Avoid selection bias:**

The pathologist is unaware of clinical, endoscopic features and previous histopathology reports.

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After slide review; 56 cases were made to chart abstraction

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clinical, endoscopic, and pathologic features of each case were correlated to be given the **final confirmed EE diagnosis** (27cases).

Research design, methods and results contd…

- H/O of atopic disorders in confirmed cases of EE were reviewed using EMR.
- To define a case of Atopic dermatitis, AAD (American Academy of Dermatology) consensus statement criterion were taken
- Total of 3/27 cases of atopic dermatitis were noted. All were females.
- Associated other atopic/allergic disorders- **pending data pooling**

Incidence Rates Male

Year	EE cases	Total person years	Incidence rate	95%Confi. interval
1995	0	39318.63	0.00	0.00-0.00
1996	0	39936.37	0.00	0.00-0.00
1997	2	39895.57	5.51	0.00-13.16
2005	4	42471.58	9.10	0.04-18.17
2006	5	43091.12	13.22	1.54-24.89
2007	6	43710.39	13.90	2.58-25.21
95-97	2	119299.0	**1.83**	0.00-4.37
05-07	15	129510.8	**5.87**	5.87-18.26

Incidence rate Females

Year	EE cases	Total person years	Incidence rates	95% confid. intervals
1995	1	40275.65	1.88	0.00-5.58
1996	0	40859.21	0.00	0.00-0.00
1997	0	40693.95	0.00	0.00-0.00
2005	1	42448.67	2.50	0.00-7.42
2006	3	42772.44	6.50	0.00-13.89
2007	5	43151.91	12.61	1.34-23.88
95-97	1	122052.43	0.64	0.00-1.91
05-07	9	128608.04	7.20	2.43-11.98

Incidence rate Total rates

Year	EE cases	Total person years	Incidence rates	95% confi. rates
1995	1	79594.29	1.05	0.00-3.13
1996	0	80795.58	0.00	0.00-0.00
1997	2	80519.51	2.79	0.00-6.67
2005	6	84920.25	8.01	1.55-14.47
2006	7	85864.56	7.84	1.95-13.74
2007	11	86862.31	13.35	5.33-21.38
95-97	3	241351.48	1.29	0.00-2.76
05-07	24	258118.88	9.73	5.78-13.68

Pending

- Description of the **demographic** features of patients diagnosed with EE is pending at currently.
- Amount of associated other atopic/allergic disorders in subjects with EE
- Temporal relationship between the onset of AD & EE

THANK YOU !!!

QUESTIONS ???