Eosinophilic oesophagitis

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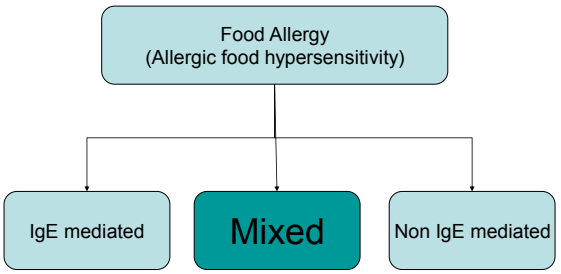
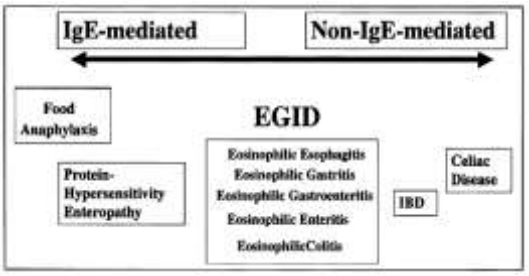
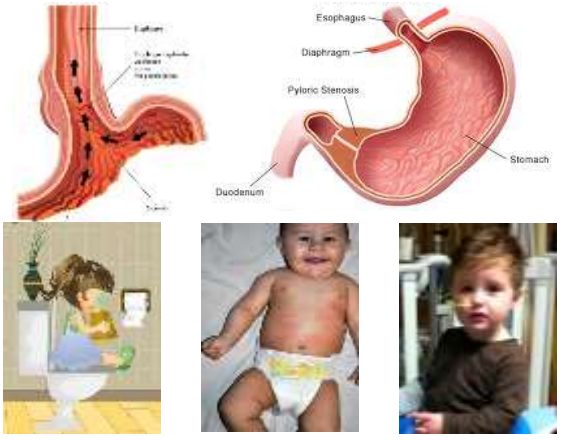
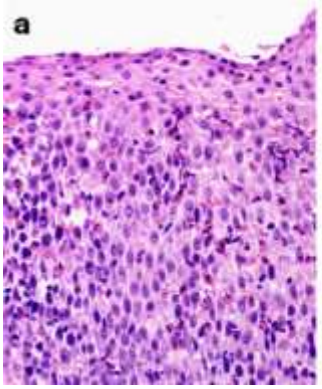
UCT



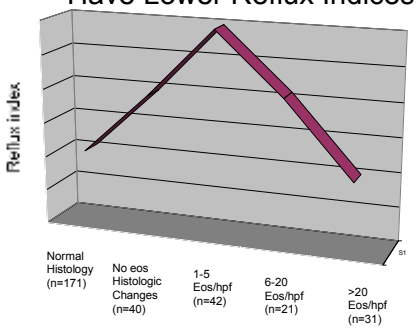
Disease Mechanisms in EGID





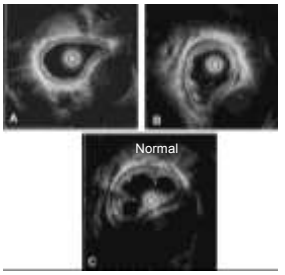


Children with Higher Eosinophil Counts Have Lower Reflux Indices



Ruchelli et al, Ped Dev Path, 1998

Radiographic Features

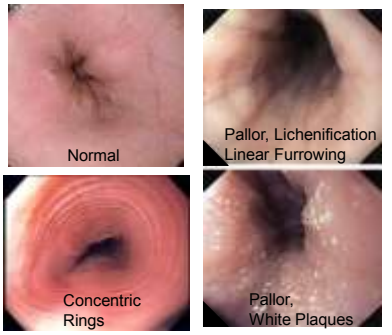


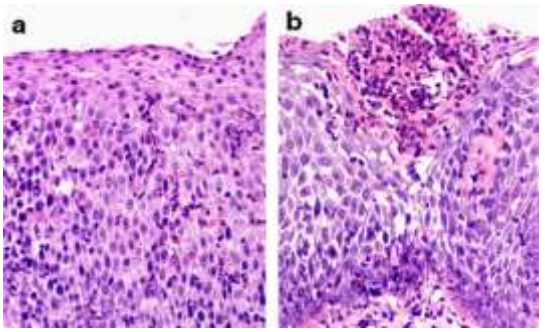
Barium swallow can show strictures, rings

Endoscopic ultrasound shows transmural thickening

Fox, et al, Gastrointestinal Endoscopy, 2003

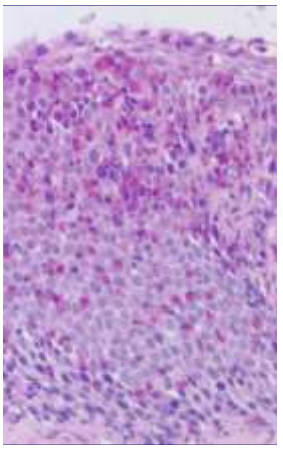
Endoscopic Features

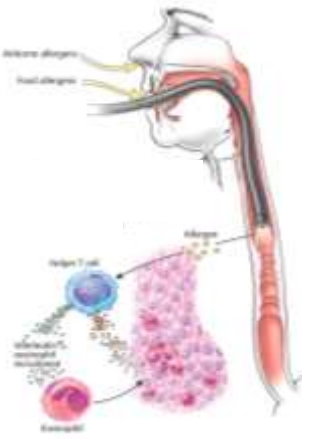


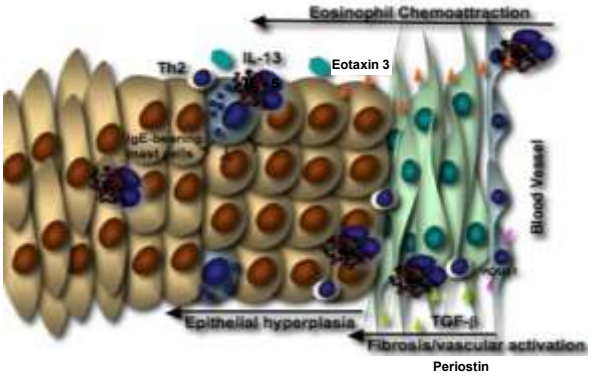


Characteristic	EE	GORD
Atopic diatheses	High (70%)	Normal
Food Sensitization	High	Normal
Sex Predilection	Male (70%)	None
Abdominal Pain	Common	Common
Food Impaction	Common	Uncommon
pH Probe	Negative	Positive
Endoscopic furrowing	Often	Uncommon
Diffuse Eosinophilia	Yes	No
Basal Zone Hyperplasia	Yes (Severe)	Yes
Number of Eosinophils	>15/hpf at 40x	<7/hpf at 40x
Acid Blockade	Partial alleviation	Alleviation
Antigen Elimination	Sometimes alleviates	No alleviation

Rothenberg JACI 2004

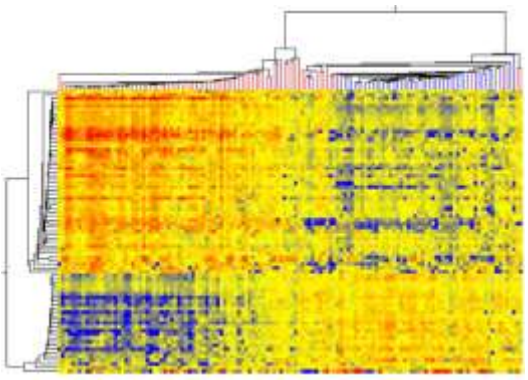






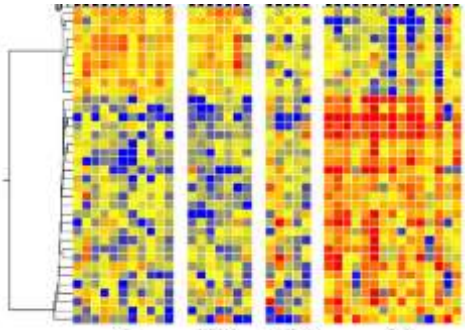
Emerging techniques

- Gene Expression Profiling
- Exhaled Nitric Oxide
- Biomarkers
  - Blood
  - Oesophageal string test
  - Saliva
- Mucosal Impedance
- Measuring fibrosis / elasticity

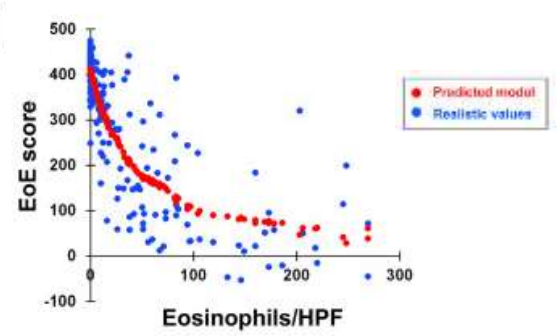


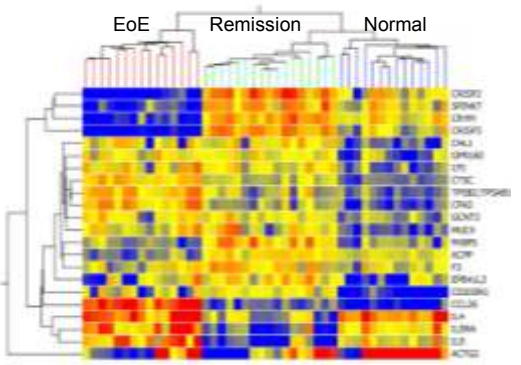
Wen. Molecular diagnosis of EoE by gene expression profiling. Gastroenterology 2013 145(6):1289-99

EoE diagnostic panel



- EoE gene expression associated with severity

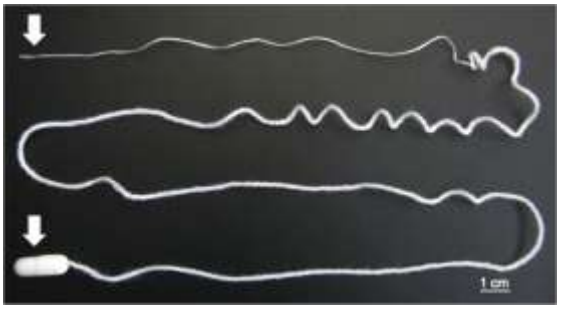




Wen. Molecular diagnosis of EoE by gene expression profiling. Gastroenterology 2013 145(6):1289-99

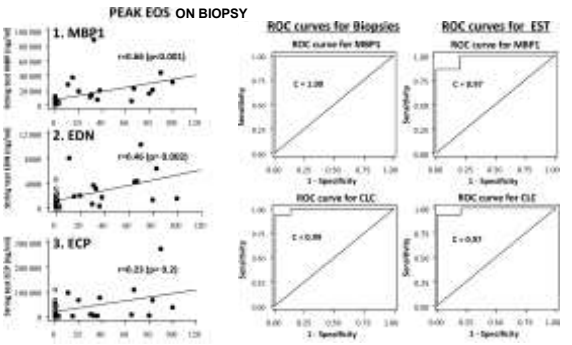
Leung. Assessment of fractionated exhaled nitric oxide as a biomarker for the treatment of EoE. Allergy Asthma Proc 2012;33:519-524

Oesophageal string test



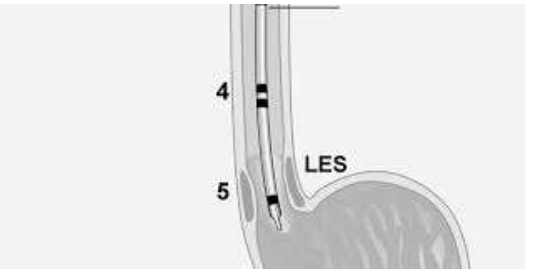
Oesophageal string test

Oesophageal string test

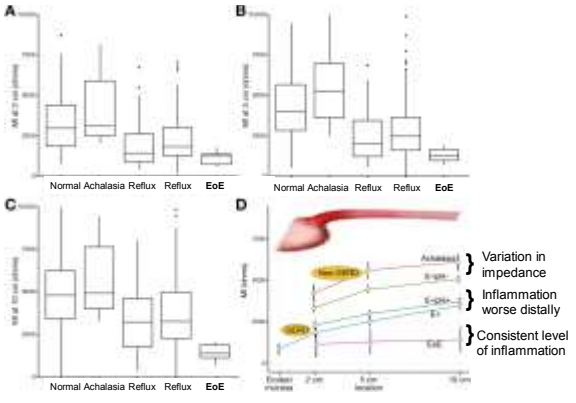


Furuta. The oesophageal string test
Gut 2013; 62 (10):1395-1405

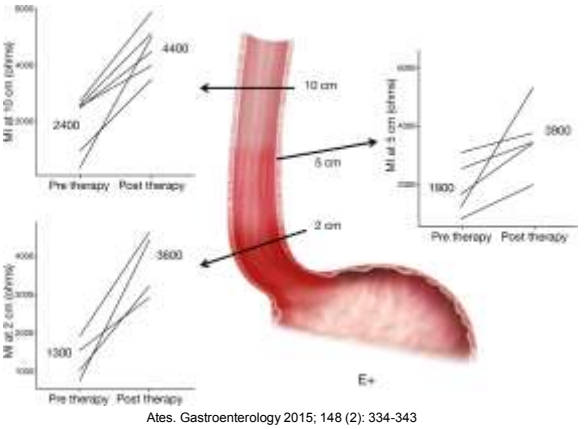
Mucosal impedance



Katzka. Clin gastroenterol hepatol 2015; 13(7):1242-48

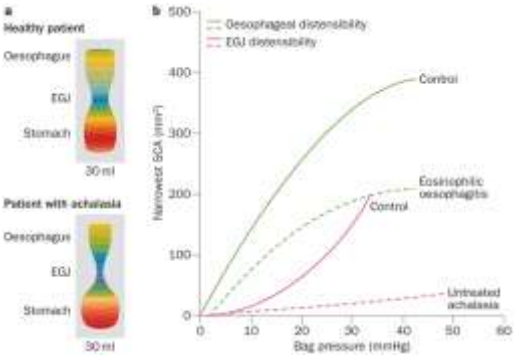


Ates. Gastroenterology 2015; 148 (2): 334-343

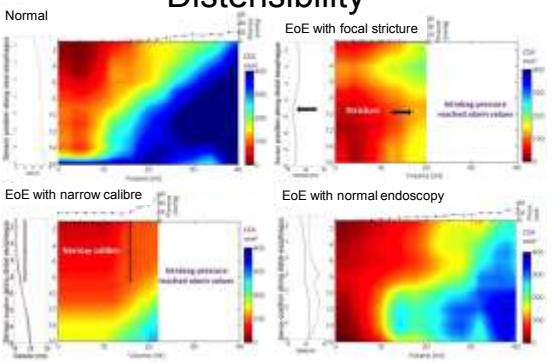


Ates. Gastroenterology 2015; 148 (2): 334-343

Distensibility

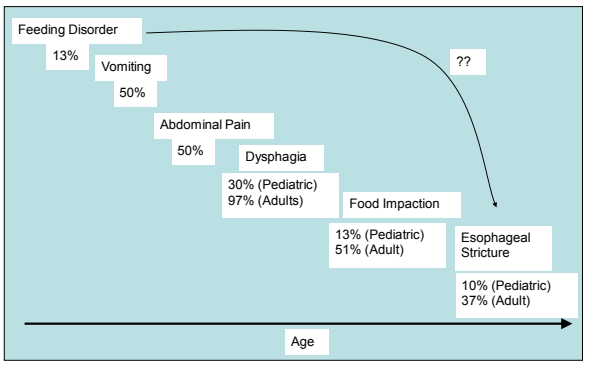


Distensibility



Lin. Functional luminal imaging probe topography. Therap Adv Gastro 2013; 6(2): 97-107

Symptom Progression in EE



Dietary Therapy: Elemental

Citation	Resolution
Kelly Gastroenterology 1995	80% resolution 100% improvement
Liacouras Clin Gastro Hep 2005	93%
Markowitz Am J Gastro 2003	96%
Spergel Ann All Immunol 2005	96%
Kagalwalla Clin Gastro Hep 2006	88%
Arias Gastroenterology 2014 **META-ANALYSIS**	91 %

Dietary Therapy: Targeted

Citation	Therapy	Resolution
Teitelbaum Gastroenterol 2002	ImmunoCAP Based Elimination	0%

Predictive Value of Food SPT and APT

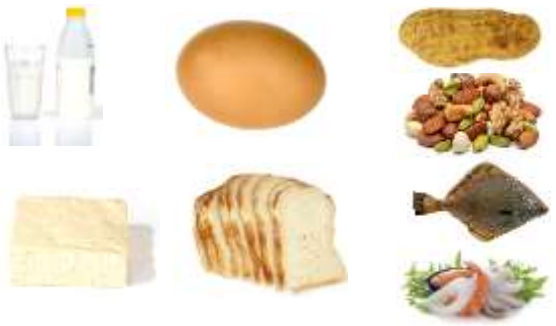
Food	SPT				APT			
	PPV	NPV	Specificity	Sensitivity	PPV	NPV	Specificity	Sensitivity
Milk	95.7%	57.7%	42.3%	97.6%	83.3%	58.7%	43.5%	90.2%
Egg	84.8%	75.4%	65.1%	90.2%	78.3%	82.8%	62.1%	91.4%
Soy	70.0%	68.9%	37.8%	89.5%	66.7%	87.3%	66.7%	87.3%
Wheat	77.8%	64.7%	18.9%	96.5%	74.2%	83.9%	71.9%	85.5%
Corn	57.1%	71.3%	13.8%	95.4%	65.8%	93.9%	89.3%	78.0%
Beef	81.8%	74.7%	30.0%	96.9%	94.4%	87.0%	65.4%	98.4%
Chicken	50.0%	83.3%	26.3%	93.3%	66.7%	95.7%	80.0%	91.7%
Rice	50.0%	85.6%	13.3%	97.5%	59.1%	96.9%	86.7%	87.5%
Potato	60.0%	89.9%	25.0%	97.6%	53.8%	94.6%	63.6%	92.1%
Peanut	77.8%	97.6%	77.8%	97.6%	75.0%	97.6%	60.0%	98.8%

Spergel et al, JACI 2007

Dietary Therapy: Targeted

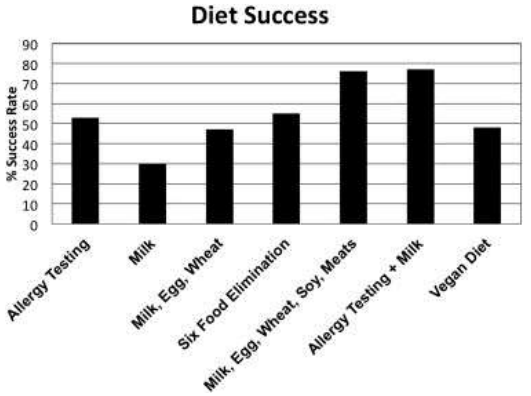
Citation	Therapy	Resolution
Teitelbaum Gastroenterol 2002	ImmunoCAP Based Elimination	0%
Arias Gastroenterology 2014 **META-ANALYSIS**	Skin prick test Based Elimination Diet	45.5%
Spergel JACI 2012	Prick/Patch Test Based Elimination Diet	53%
Spergel Ann All Immunol 2005	Prick/Patch Test Based Elimination Diet + milk	88%
Spergel JACI 2012	Prick/Patch Test Based Elimination Diet + milk	77%

Dietary Therapy: Empiric



Dietary Therapy: Empiric

Citation	Therapy	Resolution
Kagalwalla Clin Gastro Hep 2006	Empiric "6" Elimination Diet Milk, Wheat/gluten, Eggs, Soy, Peanuts/tree nuts, Fish/shellfish	74%
Spergel JACI 2012	Empiric "6" Elimination Diet	53%
Arias Gastroenterology 2014 **META-ANALYSIS**	Empiric "6" Elimination Diet	72%
Molina-Infante JACI 2014	Empiric 4 Elimination Diet Milk, Wheat, Eggs, legumes	54%
Kagalwalla Gastro 2015	Empiric 4 Elimination Diet	71%
Arias Gastroenterology 2014 **META-ANALYSIS**	Empiric 4 Elimination Diet	54%



Spergel. JACI 2012: 130(2); 461-7

Targeted exclusion diets

- Patch testing (any reaction)
- Skin prick (>=3mm)
- Milk

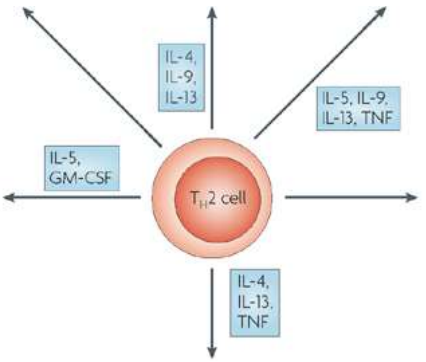
- Empiric "6" "4" 2 or 1 foods exclusion diet
- Milk, egg, wheat, corn, peanut, soy, beef, and chicken.
  - Different units may exclude different foods depending on local experience!

Corticosteroid Therapy

Citation	Therapy	Response
Liacouras et al	Oral steroids	100%

Corticosteroid Therapy

Citation	Therapy	Response
Liacouras et al	Oral steroids	100%
Teitelbaum et al Gastroenterol 2002	Topical Fluticasone Open label, Pediatric	85%
Remedios et al Gastroint Endos 2006	Topical Fluticasone Open label, Adult	95%
Konikoff et al Gastroenterol 2006	Topical Fluticasone Randomized, Controlled	50%
Aceves et al Am J Gastro 2007	Topical Budesonide Retrospective	80%

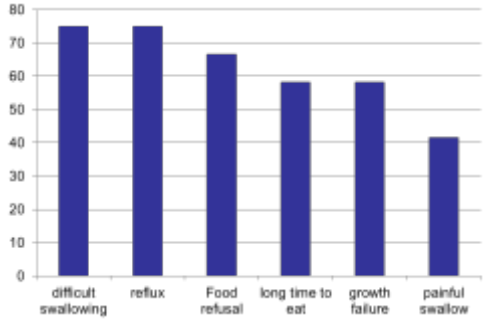


SCAH Classification 2009

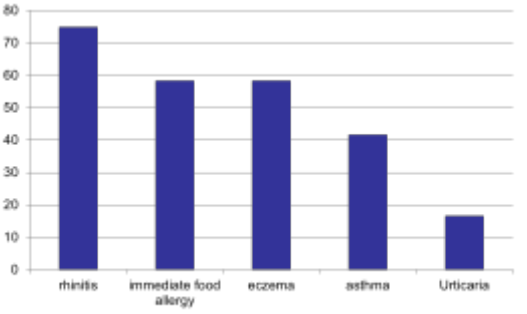
post-reflux treatment biopsy result

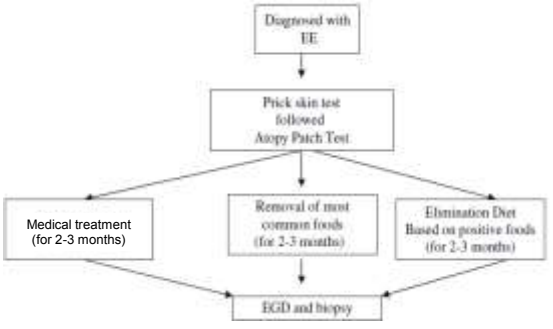
- **Definite EE**
  Typical symptoms AND eosinophil count of > 15 /hpf
- **Probable EE**
  Typical symptoms AND some eosinophils <15/hpf
  AND minor features
  AND response to EE therapy, not GORD therapy
- **Possible EE**
  Typical symptoms AND some eosinophils <15/hpf
  OR minor features
  AND uncertain / no response to therapy

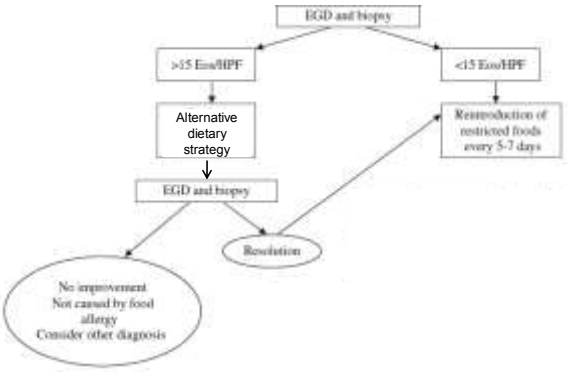
EoE symptoms

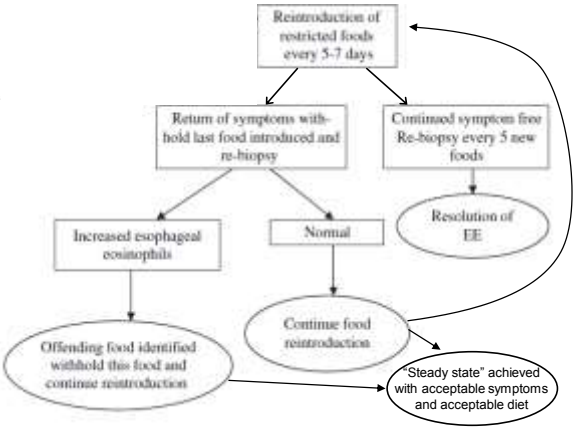


Associated atopic diseases



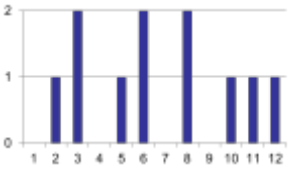




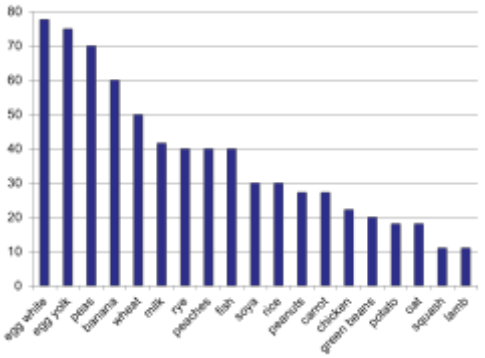


Skin prick tests

- 251 food skin prick tests
  - 21 per patient
  - 66 any reaction positive
  - Between 2 -12 per patient
  - Mean 7 standard deviation 3.4

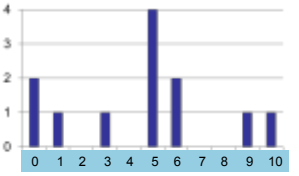


Percent positive skin tests

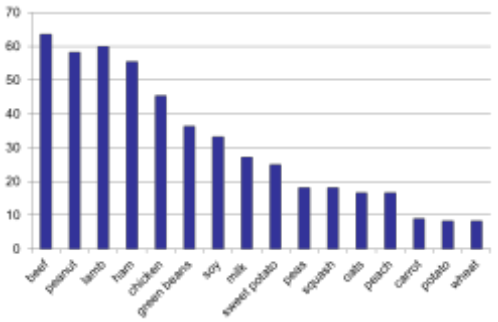


Patch tests

- 257 patch tests
  - 21 per patient
  - 55 any reaction positive
  - min per patient 0 (2 patients); max 10
  - Mean 4.6 Standard deviation 3.2



Percent positive patch tests



Acknowledgements

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