

Celiac disease

- Being increasingly reported from India
- Recent studies show that incidence in North India (Delhi, Ludhiana) may be as high as 1:100, same as that in Europe.
- Easy availability of diagnostic tools (such as serology and even duodenal biopsy) is putting the diagnosis in the hands of non specialists .

Diagnosis of Celiac Disease

- Diagnosis remains a challenge
- According to modified ESPGHAN criteria
 - Clinical features of the disease
 - Abnormal histology (as determined by Modified Marsh Criteria) on small bowel biopsy
 - Clinical improvement on GFD

Difficulties in applying these criteria in tropical countries

Clinical Features

- In India and other tropical countries conditions like recurrent /chronic diarrhea, Malnutrition, failure to thrive, anemia, short stature (clinical features of CD) occur frequently and due to several other (more frequent)causes.
- CD may often be asymptomatic
- Diagnosis made on clinical features may be often misleading

Marsh in Tropical biopsies

- *Similarly in India and In other Tropical countries*
Villous atrophy is seen in conditions other than Celiac like tropical sprue, giardiasis, CMPI, PEM, bacterial overgrowth etc.
Some studies suggest that even IEL counts in tropical settings may be higher (upto60/100EC) in non celiac biopsies.
Difficult to interpret Marsh criteria specific to Celiac Disease.
Over diagnosis of celiac disease possible if we depend , solely on Marsh Criteria

MARSH CRITERIA IN TROPICAL SETTINGS, HOW RELEVANT?

Mukesh Yadav, Santosh K. Mittal Ranjana Gondal
Chacha Nehru Bal Chikitsalaya and GB Pant Hospital
New Delhi, India

MATERIAL & METHODS

- Site- Chacha Nehru Bal Chikitsalya, Delhi ,India, A Tertiary level Teaching Hospital
 - Prospective case control study
 - *Inclusion criteria*
 - Children 1-12 years of age on gluten containing diet.
 - Clinical features (Chronic diarrhea, FTT , Short stature etc) suggestive of celiac disease
 - *Exclusion criteria*
 - Children already diagnosed as Celiac or on gluten free diets.
 - *Controls*
 - Children who were undergoing UGIE for diseases other than Celiac disease (portal hypertension, abdominal pain ,foreign body etc) .
- Approval of Institutional Ethic Committee was available*

Material And Methods

Apart from routine investigations serum anti TTGA levels were done in all cases utilizing kit supplied by EROIMMUN medizinische labrodiagnostika AG.

Anti TTGA level of 20 IU/dl was taken as cut off point as recommended by the manufacturer

Serum IgA levels were also obtained in those children with clinical features of Celiac disease but with normal anti TTGA.

Materials and Methods

- On the basis of Clinical features and Anti TTGA levels, the Children were divided into 3 groups
- Group I (42 children)
Suggestive Clinical features and Serum Anti TTG A levels >20 IU/dl
- Group II (32 Children)
Suggestive Clinical features and Serum Anti TTGA levels <20 IU /dl
- Group III (37 Children)
Clinical features not suggestive of Celiac disease and also anti TTGA levels <20 IU/dl

Material and Methods

After informed consent ,an Upper GI endoscopy was done and multiple (at least two)Duodenal biopsies were obtained from 2nd or 3rd part of Duodenum

Biopsies were reported by a Pathologist who was blind to the Clinical features as well as to the serum anti TTGA levels

The biopsies were interpreted as per Modified Marsh criteria

Modified Marsh Classification of Celiac Disease

Marsh Type	Intraepithelial Lymphocytes/100 Enterocytes	Crypts	Villi
0	<40	Normal	Normal
1	>40	Normal	Normal
2	>40	Increased	Normal
3a	>40	Increased	Mild Atrophy
3b	>40	Increased	Marked Atrophy
3c	>40	Increased	Absent

Type 0: Normal mucosa: CD highly unlikely

Type 1 (Infiltrative lesion): Seen in patients on a gluten-free diet (suggesting minimal amounts of gliadin are being ingested); patients with DH; and family members of patients with CD. However, these patients need to be followed because they may convert to a Type 3 lesion.

Type 2 (Hyperplastic type): Very rare; seen occasionally in DH

Type 3 (Destructive lesion): Spectrum of changes seen in symptomatic CD

Modified Marsh Grading in different groups

MODIFIED MARSH GRADING	GROUP 1(CLINICAL FEATURES AND ANTI TTGA >20IU/dL)	GROUP 2(CLINICAL FEATURES AND ANTI TTGA <20IU/dL)	GROUP 3
0	5	22	30
1	2	3	4
2	0	0	0
3a	7	5	2
3b	14	0	1
3c	14	2	0
total	42	32	37

Results

- IN GROUP 1
5/42(11.9%)-NORMAL HISTOLOGY
?False Negative Marsh
- IN GROUP 2
10/32(31.2%)-ABNORMAL HISTOLOGY
?False Positive Marsh in symptomatic children
- IN GROUP 3
7/37(18.9%)-ABNORMAL HISTOLOGY
?False Positive Marsh in asymptomatic children

EVALUATION OF MARSH CRITERIA AGAINST SEROPOSITIVITY

	Modified marsh grade 2-3	Modified marsh grade 0-1	total
Serum ttgA>20IU/dl	35	7(16.6%)	42
Serum ttgA<20IU/dl	10(14.5%)	59	69
total	45	66	111

Levels of Anti TTGA & Marsh grading in group 1

Modified marsh grades	Serum ttgA >100 IU/dl	Serum ttgA (20-100 IU/dl)	
0	4(11.76%)	1(12.5%)	
1	1(2.94%)	1(12.50%)	
2	0	0	
3a -3c	29(84.29%)	6(75%)	Not significant
total	34(100%)	8(100%)	

CONCLUSIONS

- Histology May be Negative even in Clinically suspected and serologically positive Children
- Histology may be positive (even Gr 3a-c) in apparently normal children or in sero negative, Clinically suspected children
- Neither Serology ,Nor Histology can be taken in isolation for diagnosis of Celiac in Tropical settings

Recommendation

- In view of High false positivity rates of modified marsh criteria in Tropical countries and Life long implication of diagnosis of CD ,it should be diagnosed only when both serology and histology are abnormal in a clinically suspected child.