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Original Article

In Celiac disease: Type 3a, 3b and grade BI is more frequent on Marsh Modified (Oberhuber) / Corraza classification.

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Abstract:

Introduction: Histopathological alterations in celiac disease (CD)are villous atrophy, intraepithelial lymphocyte infiltration and crypt hyperplasia. It is caused by gluten in genetically predisposed persons. Duodenum and proximal part of jejunum are most commonly involved. Various classifications are used to define histopathological features of CD, but it is easier to define on Marsh modified (Oberhuber) Corraza classification.
Objective: The object of study is to differentiate histopathogical feature of celiac disease on Marsh modified (Oberhuber) and Corraza classifications
Methodology: This retrospective study of 66 cases of CD carried out at Muhammad Medical college Mirpurkhas Sindh Pakistan between January 2016 to December 2017. Fresh slides prepared and dually observed. All observations denoted and systemized on Marsh modified (Oberhuber) Corraza classification. There are many mimics of CD, they should be excluded for the proper approach to diagnosis.
Conclusion: Histopathogical finding are helpful in CD if they are carefully classified. Typing and grading system of Marsh modified Corraza classification is easier to define and is supportive to observe the features in diagnosis and prognosis of disease.

Key words: Celiac disease, Intraepithelial lymphocytes, villous atrophy. Histopathology, serology

Introduction:

Celiac disease (CD) is immune mediated enteropathy that occurs in genetically predisposed individuals in response to gluten ingestion. It most commonly involves duodenum and proximal part of Jejunum[1]. The histopathological alterations present in celiac disease are villous atrophy, increased number of intraepithelial lymphocytes (IELs) and crypt hyperplasia (CH)[2]. Gluten is type of protein which is contained in grains like wheat, rye and barley. It is better to avoid foods such as bread and bear. Ingesting small amounts of gluten in crumbs like cutting board or toaster can trigger intestinal damage. Immunologically there is intraepithelial response to gliadin. The gliadin peptides interact with HLA-DQ2 or HLA-DQ8 on antigen presenting cells. In response CD-4+T cells are stimulated to produce cytokines and cause the tissue damage. Celiac disease is diagnosed on histopathological and serological findings[3]. Some other disorders also mimic CD with same clinical presentations and histopathological features. The disease should be differentiated on histological findings, grade and serology investigations [4]. Various classifications are used to define CD, but Marsh Modified (Oberhuber) Corraza classification is easier[5]. Serologically, detecting IgA anti tissue transglutaminase antibody (TTGAg) has high sensitivity (93%) and specificity (95%). TTGAg is ELISA based technique. IgA anti-endomysial antibody (EMA) is also available having higher specificity, a test performed on immunofluorescence assay (IFA)[6]. Either histopathology or serology test alone is insufficient for the diagnosis of CD, but application of both tests with clinical correlation at the same time are supportive to diagnostic approach[7].

Table 1 - Histological classification commonly used in CD[8].

Histologic Criterion				
Marsh Modified	**Increased Intraepithelial Lymphocytes**	**Crypt hyperplasia**	**Villous atrophy**	**Corraza**
Type 0	No	No	No	None
Type 1	Yes	No	No	Grade A
Type 2	Yes	Yes	No	
Type 3a	Yes	Yes	Yes (partial)	Grade B1
Type 3b	Yes	Yes	Yes (subtotal)	
Type 3c	Yes	Yes	Yes (total)	Grade B2

* > 40 intraepithelial lymphocytes per 100 enterocytes for Marsh modified (Oberhuber).

* > 25 intraepithelial lymphocytes per 100 enterocytes for Corraza.

Methodology:

This retrospective study carried out at department of pathology Muhammad Medical College Mirpurkhas Sindh Pakistan. All 66 histopathologically diagnosed cases were collected between January 2016 to December 2017 to review and highlight according to Marsh Modified (Oberhuber) Corraza classification. All blocks were processed to recut and stain with hematoxylin and eosin stain. The data was collected from registers, forms and pervious histopathology reports. All slides dually reviewed to denote the pathology changes, as intraepithelial lymphocytes (IELs) count, crypt hyperplasia (CH) and degree of villous atrophy.

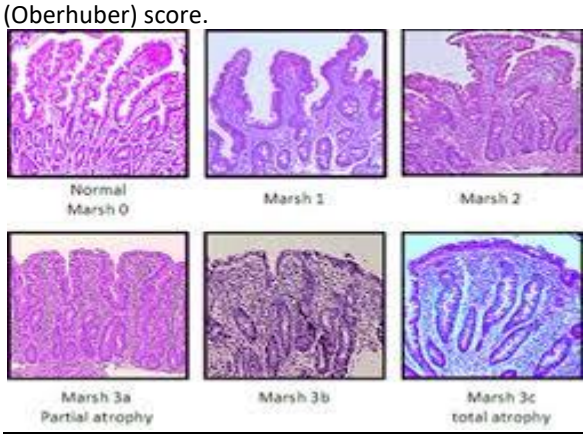
Results:

The study cohort consists of 25 (37.8%) male and 41 (62.2%) female, having mean age of 44 years (range18-52years). On Marsh modified (Oberhuber) classification out of 66 cases, 05(7.57%) presented with more than 30 IELs without CH and villous atrophy (Type I). 03 cases (4.54%) showed IELs with CH, villous atrophy was not discernable (Type 2). The partial villous atrophy seen in 18 cases (27.2%) with IELs and CH (Type 3a). The histopathology findings were conspicuous in 27 cases (40.9%) with subtotal villous atrophy, increased IELs and CH (Type 3b). The total villous atrophy was present in 13 cases (19.6%) with other changes like increased IEts and CH (Type 3c). Same cases on Corraza classification adjustments 08 (12.1%) grade A, 45 (68.1%) grade BI and 13 (19.6%) in grade B2. Overall type 3a and 3b on Marsh modified (Oberhuber) classification and on Corraza classification Grade BI found more frequent.

Table2 – Results of histopathological typing and grading of patients with celiac disease according to Marsh modified (Oberhuber) and Corraza classification. (N:66)

Marsh Modified (Oberhuber) Corraza					
Type	Number (n)	Percent	Grade	N	%
0	0	0	0	0	0
1	5	7.57	A	8	12.1
2	3	4.54			
3a	18	27.2	B1	45	68.1
3b	27	40.9			
3c	13	19.6	B2	13	19.6

Histopathology of intestinal biopsy in CD. Marsh modified (Oberhuber) score.



Discussion:

The focus of study is to differentiate celiac disease on modified histopathological classifications. Prognosis depends upon the type and grade of disease. The rebuttal of Oberhuber subdivision of Marsh III type in celiac disease and the classifications made by Corraza and viVlancci[9] or by Ensari are useful with high specificity and sensitivity where study on markers is required[10]. Different systems have been proposed but the Marsh modified and Corraza grading are more acceptable. The evaluation of celiac disease on histopathology differ in patients whether they are adherent to gluten or getting gluten free diet regime, the microscopical analysis is focused on the features present. These are conclusive to the specialist in their therapeutic decisions. In various studies it has been reported that type I in Marsh modified (Oberhuber) and grade A is more frequent with prevalence of 5.4% in general population. Type I lesion is also known as lymphocytic duodenosis and may reveal positive serology when it is associated with CD[11]. Different studies evaluate celiac disease prevalence in 9% to 40% of patients with lymphocytic duodenosis[12]. Though histopathology is mandatory for the diagnosis of CD, but it is conclusive on positive serology. The features like CD may also present in other conditions as infections, autoimmune diseases, neoplasia, drugs and other conditions[13]. Sometimes dermatitis herpetiformis is associated with CD, in these cases the IgA antibodies to gluten, cross react with reticulin in skin, resulting injury and inflammation produce

a subepidermal blisters. Patients are positive on serology and respond to gluten free diet[14]. Sometimes celiac disease is non-responsive to clinical management, 4-30% of patients have concomitant symptoms and signs of disease. The diagnosis of disease in these patients should be reconfirmed on biopsy and serology[15]. The presence of increases intraepithelial lymphocytes, villous atrophy or crypt hyperplasia may associated with the conditions other than celiac disease[16]. In small number of patients, the symptoms persist despite strict adherence to gluten free diet for over 12 months, if other causes of villous atrophy have been excluded, the patients with such conditions are diagnosed as refractory celiac disease[17]. Careful and accurate histopathological diagnosis according to their type and grading is helpful in treatment. Seropositivity and biopsy result should always correlate clinically. If the symptoms persist it is better to exclude the mimics of disease. Before considering it as refractory celiac disease it is necessary to evaluate patients' adherence to gluten free diet[18]. Sometimes molecular diagnosis is necessary for CD related genotypes[19].

Conclusion:

Marsh Modified (Oberhuber) Corraza classification type 3a, 3b, and grade BI are more frequent in CD. Histopathological features with serological findings and clinical correlations are helpful to differentiate the disease and for appropriate treatment.

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