

Laboratory

Your partner in health care...
together we make a difference

Connection

A Newsletter of CCH Laboratory Services

December 2016

May the holidays bring you peace and the New Year every blessing. Wishing you the joy of family, the happiness of friends, and the wonder of the Holiday Season.

~ Happy Holidays

The holiday season leads us into a new year that is filled with anticipation, possibility and promise. With our continued business relationships, we celebrate the opportunity to further enhance the value of services we all provide — together — to our communities throughout the region. We are thankful for your collaboration and are excited for the prospect of forging new and deeper partnerships.

From the teams within CentraCare Health Laboratories, we express our wishes for your health and prosperity throughout the New Year ahead.



CENTRACARE Health

Celiac disease

By: Jess Hom, Specimen Referral Center Co-Lead

Celiac disease is a chronic inflammatory condition caused by exposure to the protein gluten, which is found in wheat, barley and rye. The inflammatory response primarily affects the small intestine, resulting in atrophy of the villi. Intestinal villi are responsible for absorption of vitamins, minerals and other nutrients that you eat.

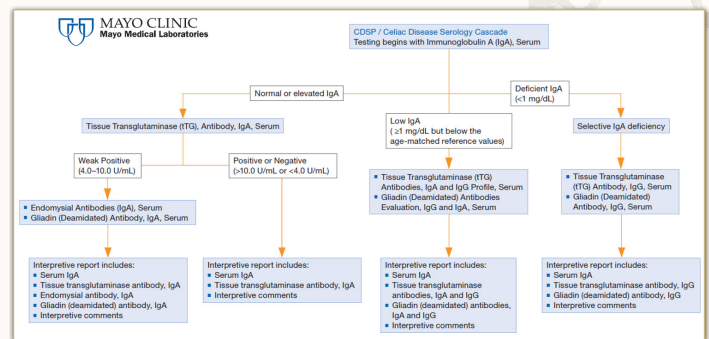
Symptoms associated with celiac disease include abdominal pain, diarrhea, and/or vomiting. Over time undiagnosed celiac disease in adults can lead to malnutrition, including iron-deficient anemia and osteoporosis. Children typically present with failure to thrive. Due to the nonspecific symptoms of celiac disease, diagnosis can be difficult.

The two key components for the development of celiac disease are an environmental exposure to gluten and a genetic susceptibility. The genetic susceptibility lies within two specific alleles of the human leukocyte antigen complex (HLA), HLA-DQ2 and HLA-DQ8. HLA-DQ2 is found in approximately 90-95 percent of individuals with celiac disease with the remaining 5-10 percent possessing HLA-DQ8. These alleles have been identified as necessary, but not sufficient for celiac disease. The absence of these alleles will ultimately exclude celiac disease as a diagnosis. One of the first steps in diagnosing celiac disease is to determine IgA levels. It has been observed that patients with celiac disease have selective IgA deficiency at a frequency of 10-fold higher than the general population. This is an important factor given that there are specific antibody tests used in celiac disease diagnosis that are of the IgA isotype.

After IgA levels have been determined, there are three other antibodies that need further evaluation: tissue transglutaminase (TTG), deamidated gliadin antibodies and endomysial antibodies (EMA). The IgG and IgA isotypes of TTG and deamidated gliadin antibodies are tested, while only the IgA isotype of EMA is tested.

It should be noted that these specific antibody levels will generally decrease when a patient has properly followed a gluten-free diet.

Because of very non-specific symptoms and a variety of tests available, choosing the correct tests and the order in which to perform them can be confusing. Thankfully, our reference laboratory, Mayo Medical Laboratories, has developed a very useful algorithm to aid in testing. The primary algorithm used is the Celiac Disease Serology Cascade:



http://www.mayomedicallaboratories.com/it-mmfiles/Celiac_Disease_Serology_Cascade.pdf

Red Cross blood supply

Modified letter from: J. Chris Hrouda Executive Vice President, American Red Cross Biomedical Services

As you are no doubt aware, blood suppliers across the country are experiencing significant supply shortages. Unfortunately, the Red Cross is no exception. After several years of steady decline in demand, the need for blood products has rapidly flattened and most blood centers are challenged to keep pace with the. While considerable investment has been made to restore inventories, I feel it necessary to alert our hospital partners that this situation will not be resolved.

Most importantly, I want to assure you that Red Cross has taken several actions necessary to rebuild a sufficient blood supply. We have initiated a multi-phased inventory recovery plan. Specifically, we deployed a donor outreach campaign that resulted in several thousand incremental blood donations and continues to yield improvement in our recruitment efficiency. The second phase was a full scale direct appeal to all existing and lapsed donors throughout the country. This national appeal was augmented with a traditional media campaign declaring an emergency need for blood donors. Our approach is strategically designed to maximize donor response and to net more donations. We are continually monitoring the effectiveness of these efforts and prepared to make any modifications throughout our implementation of these initiatives.



American Red Cross

In addition to our actions, we are seeking collective stewardship amongst all our hospital partners to ensure blood product utilization is appropriately managed. Where necessary we will continue to limit orders to guarantee safety stock levels are available for emergency distribution. I encourage you to share this information with your administration and hospital colleagues so that your hospital inventory can be managed accordingly and you can institute any needed precautionary measures. Please consult as needed with your Red Cross Medical Director to determine the need of critically low blood products.

I regret Red Cross finds itself in this situation and that it has impacted your normal operations. Unfortunately, this is an industry wide setback affecting multiple blood suppliers across the country. I appreciate your patience and cooperation. I commit to keep you apprised of our progress. We will communicate with you regularly.

I am confident that in partnership with you, with regular communication and the committed support of your Red Cross team, together we will meet your patient needs.

What about Dara?: Daratumumab-Darzalex™

By: Bridget Parsons, CLS and Rachelle Hoefft, Transfusion Services Specialist

What is the big deal about the multiple myeloma (MM) drug, Daratumumab (Dara)? If you talk to a transfusion services tech you will see their jaw drop and they will get a little sweaty. MM patients will become anemic during their Dara treatments, leaving transfusion services facing panagglutination of epic proportions.

Dara is an anti-Cluster of Differentiation 38 (CD38) monoclonal antibody that targets CD38 on red blood cells. Myeloma cells also exhibit CD38 in large portions, but so do all the reagent red cells used for testing in transfusion services.

Multiple myeloma (MM) is a form of cancer characterized by an abundance of plasma cells in the bone marrow. Plasma cells are B cell lymphocytes capable of producing antibodies. When these cells become malignant, they overproduce antibodies causing an increase in monoclonal protein (M protein), which is one of the diagnostic findings of the disease. Malignant plasma cells have an abundance of protein markers on the cell's surface, specifically CD38. CD38 is found in low levels on the normal leukocyte and erythrocyte membranes and overexpressed on malignant plasma cells.

It may come as no surprise that a drug that uses human antibodies may become problematic within the realm of transfusion medicine. In two recent studies, 100 percent of patients receiving Dara showed positive antibody screens and panreactive antibody identification panels with all methods involving indirect antiglobulin testing (IAT). These patients also can present with a positive or negative Direct Antiglobulin Test (DAT) and autocontrol. Luckily, Dara does not interfere with non-IAT testing such as ABO/Rh and immediate spin crossmatching.

Dara is not a first line of defense treatment for MM. Only if the patient is refractory, has had three previous chemotherapy regimens, and is experiencing relapse will Dara be considered. This is the only stand-alone drug now available for MM patients. There are other monoclonal antibody drugs that do not interfere with transfusion services testing (anti-CD2 for instance), but they must be combined into a chemotherapy 'cocktail.'

What are the options for transfusion services to provide the safest and timeliest blood possible? CentraCare's Coborn Cancer Center has developed a protocol for baseline testing. Before the patient's first treatment, a sample will be drawn for a Type & Screen as well as a sample for an HEA panel. The Type & Screen will detect any pre-treatment underlying alloantibodies. The HEA panel is a molecular genotype that will provide the patients' antigen status for clinically important blood groups during the time Dara is interfering with testing.

Treatment with Dara will typically last nine months and interference can be seen up to six months after treatment is discontinued. That amounts to 15 months of very complex immunohematology. During that time, anemia can occur in the MM patient requiring transfusion. By having the baseline Type & Screen and knowledge of the patients' genotype, a Type & Screen sample can be sent to the North Central American Red Cross (ARC) Reference Lab in St. Paul for dithiothreitol (DTT) treatment and testing. DTT cleaves the sulfhydryl bonds of CD38 but leaves most of the blood group antigens intact (one casualty is big K). By freeing the reagent red cells of their CD38 the Dara cannot cause interfering agglutination and testing can resume as normal. This testing and blood product acquisition has a one day turn-around time depending on the patient's antigen profile and whether the patient has a known alloantibody. CentraCare Laboratory Services at St. Cloud Hospital also is in the process of validating in-house DTT treatment which will greatly reduce the turnaround time for these patients.

This drug is the only one of its kind so far, but there are at least three other anti-CD38 monoclonal antibody drugs under FDA review. We have not seen the last of panagglutination due to drug interference.

QUESTIONS AND COMMENTS

If you have questions or comments, please contact **Jeremy Angell**, coordinator, CentraCare Laboratory Services, 320-251-2700, ext. 57248 or cclabser@centracare.com. If you would like to be added or removed from our email distribution list, please let us know.

