The LFA test for histoplasmosis is more accurate in patients with high burden of infection.

Conclusion. The MVista Histoplasma galactomanan LFA may meet the need for accurate rapid diagnosis of histoplasmosis in resource-limited settings, especially in patients with relatively high disease burden, potentially reducing morbidity and mortality.

Disclosures. Melissa Minderman, Bachelor's Degree, Molecular Biology, MiraVista Diagnostics (Employee) Suphansa Gunn, Bachelor's Degree, psychology, MiraVista Diagnostics (Employee) Lawrence J. Wheat, MD, MiraVista Diagnostics (Employee)

722. Parasitic and Non-Parasitic Causes of Eosinophilia in Children Presenting to a Tertiary Care Center in the United States

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Session: P-34. Eukaryotic Diagnostics

Background. Peripheral eosinophilia can be caused by many underlying conditions, including infectious pathogens, allergic disorders, neoplastic disorders, and immunological disorders. However, uncovering the cause of eosinophilia in children can be challenging due to the wide differential diagnosis.

Methods. To identify causes and risk factors of eosinophilia in children, we performed a retrospective chart review of children presenting to Texas Children’s Hospital in Houston, TX with peripheral eosinophilia from January 1, 2011 to December 31, 2019. Eosinophilia was classified as mild (absolute eosinophil count or AEC >500 and < 1500), moderate (AEC >1500 and < 5000) and severe (AEC > 5000).

Demographic information in addition to travel history, co-morbid conditions, and diagnostic workup were collected.

Results. A total of 773 patients under 18 years of age were evaluated. The most common cause of eosinophilia in children was atopy (N=343, 44%), followed by eosinophilic gastrointestinal disorder (N=227, 29%). Infectious pathogens were the etiology in 8% of cases of which all were parasitic pathogens. Helminth (n=48, 79% of parasitic diseases in total) pathogens were more common than protozoan (n=13, 21% of parasitic diseases in total) and patients with parasitic infections had higher median eosinophilia compared to other subgroups (median = 1661, range 512-17,501) with the majority having moderate to severe eosinophilia (57%). The most common helminth was Toxocara (n=31), followed by Strongyloides (n=15), and, more rarely, pinworms (n=4). The most common protozoa identified was Dientamoeba fragilis (n=9), followed by Entamoeba species (n=5), Endolimax nana (n=4), Blastocystis hominis species (n=3), and Iodamoeba butschlii (n=1). Many unknown cases had limited workup that did not include investigations for common parasites.

Conclusion. While atopy and unknown etiology were the most common diagnoses, eosinophilia for children presenting with eosinophilia, parasites were relatively common and should be considered in the differential when investigating etiologies for peripheral eosinophilia.

Disclosures. Joud Hajjar, MD, MS, Baxalta (Grant/Research Support) Horizon (Advisor or Review Panel member) Pharming (Advisor or Review Panel member)

723. Cryptosporidium Detection in Preserved Stool Specimens: A Comparison Study of EIA, DFA, and Direct Microscopic Method

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Session: P-34. Eukaryotic Diagnostics

Background. Cryptosporidium is an intestinal parasite that may cause diarrhea. Laboratory diagnosis largely relies on microscopic or immunological-based antigen detection. Direct fluorescent antibody (DFA) is considered the gold standard. Enzyme immunoassay (EIA) has an alternative, but direct comparison studies for the performance together with the impact from different specimen preservation media are limiting.

Methods. We compared these three methods for the detection of Cryptosporidium oocysts (direct microscopic) or antigen (DFA or EIA) from stool samples preserved in either 10% buffered formalin, Cary-Blair/CStS, or Total Fix (MCC, Torrance, CA). The DFA from Meridian Bioscience (Cincinnati, OH) and the EIA using CRYPTOSPORIDIIUM II (TechLab, Blacksburg, VA) were performed according to the manufacturer’s instructions. The direct microscopic method was performed according to laboratory protocols, including direct wet mount, modified acid-fast stain, or permanent trichrome stain.

Results. A total of 140 samples, including 116 clinical specimens, 20 validation panel samples and 4 proficiency survey specimens, were examined (Table 1). The DFA and EIA methods produced 100% concordant results using all three preservatives, while the microscopic method had decreased sensitivity. All microscopic positives remained positive for both the DFA and EIA. Cross-reactivity from other parasites, such as Giardia, of the two immunoassays was not observed.

Conclusion. While the two immunological methods both outperformed the microscopic method, the EIA has the advantages of being objective, simple to perform, has less hands-on time, and thus makes it an attractive option for high throughput Cryptosporidium detection.

Disclosures. Kileen L. Shier, PhD, D’ABMM, MLS(ASC/ACP)CM, Quest Diagnostics (Employee)

724. LDBIO Toxoplasma Test in the United States and Beyond: Review of the Device’s Performance on U.S. Samples and its Ability to Avoid False Positives

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Session: P-34. Eukaryotic Diagnostics

Background. Part of an essential “toolbox” to eliminate Toxoplasma gondii infection is prompt recognition of acute infection acquired during gestation, in order to initiate treatment for congenital toxoplasmosis (CT). From conception to one month post-partum, screening seronegative pregnant women monthly for antibody to the parasite enables treatment that prevents trans-placental transmission of newly acquired maternal Toxoplasma, or that attenuates signs and symptoms of CT. Tests that are highly sensitive and specific—and that meet the other World Health Organization ASSURED criteria for diagnostics—are very useful for this kind of screening. Herein, we evaluated the accuracy of a test that meets these criteria—the LDBIO Toxoplasma ICT IgG-IgM device (LDBIO)—and whether it eliminated difficulties of other tests with false positive IgM results.

World Health Organization A.S.S.U.R.E.D. criteria

These are criteria for ideal screening or diagnostic tests, as described in a September 2017 paper in the Bulletin of the World Health Organization. Our study focused mostly on sensitivity and specificity for the LDBIO immunochromatography test for IgG and IgM specific to toxoplasma gondii.

Methods. Both parts of this study examined results generated by the LDBIO device—a point-of-care immunochromatography test for Toxoplasma IgG and IgM—using serum and whole blood samples. With whole blood, thirty microliters were collected using a glass micro hematocrit tube. With both sera and whole blood, samples were loaded into the well of the LDBIO device, which took 20 minutes to generate results. In the first part of this study, we summarized results from three published U.S. studies and added new data from an ongoing clinical trial at the University of Chicago Medical Center (UCMC). In the second part of this study, we compiled data on how the LDBIO device performed on a total of 69 samples from U.S. and French studies that had led to false positive results when tested with commercially available comparator tests. Four of these false positives came from the UCMC trial.

UCMC Feasibility Study Flowchart

Table 1. Cryptosporidium Detection from Preserved Stool Specimens

| Preservation Medium Type of Organ | Total # | Cryptosporidium | Microscopic | DFA Method | EIA Method | DFA/EIA Agreement (%) |
|----------------------------------|--------|----------------|-------------|------------|------------|-----------------------|
| Total Fix                        | 80     | Yes            | 44          | 50         | 50         | 100                   |
| 10% Buffered Formalin            | 18     | Yes            | 5           | 5          | 5          | 100                   |
| Cary-Blair/CStS                  | 20     | NA             | 10          | 10         | 10         | 100                   |
| Guided Survey (CAP)              | 6      | NA             | 2           | 2          | 2          | 100                   |
| Total (Diagnosed)                | 144    | NA             | 25          | 25         | 25         | 100                   |

**W/V:** positive; **V/V:** negative; **DFA:** direct fluorescent antibody; **EIA:** enzyme immunoassay; **NA:** not applicable.

Methods. We compared these two studies for the detection of Cryptosporidium oocysts (direct microscopic) or antigen (DFA or EIA) from stool samples preserved in either 10% buffered formalin, Cary-Blair/CStS, or Total Fix (MCC, Torrance, CA). The DFA from Meridian Bioscience (Cincinnati, OH) and the EIA using CRYPTOSPORIDIIUM II (TechLab, Blacksburg, VA) were performed according to the manufacturer’s instructions. The direct microscopic method was performed according
As LDBIO shows high sensitivity and specificity and can avoid confounding false positive results, this device merits consideration as a high-quality screening test that can assist public health efforts to improve CT care worldwide.

Countries Working to Implement Regular Prenatal Screening for CT Prevention

The countries in green represent countries currently working with the University of Chicago to implement regular prenatal screening programs for Toxoplasma gondii: U.S., Panama, Colombia, Brazil, Morocco, and France. Screening programs in all six countries rely on low-cost, highly-accurate screening technology that meets the WHO’s ASSURED criteria. The LDBIO test—which is already in use in France—may become a usable resource in the other five countries if it gains FDA approval.

Disclosures. All Authors: No reported disclosures

725. Complete Blood Count Values Vary in Degree of Change with Day of Fever in Children with Dengue Fever

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Session: P-35. Global Health

Background. Dengue fever (DF) is an acute viral disease which can lead to severe illness, including dengue hemorrhagic fever, marked by thrombocytopenia and hemolytic anemia, as well as end-organ damage. Despite the well-known presentation and prevalence, changes in hematologic markers across the DF course have not been well-described in children. We sought to investigate the association of clinical laboratory values over time with dengue disease progression and outcome in a pediatric population in the Dominican Republic.

Methods. Pediatric participants were enrolled at Hospital Infantil Dr. Robert Reid, Santo Domingo, Dominican Republic, in a prospective, observational case-based study. Laboratory values, including complete blood count (CBC) indices and dengue titer results, were collected over the course of hospital stay. Using linear mixed models, we assessed whether 13 different CBC values and time trajectories differed by dengue status, including age and sex as covariates. To account for multiple testing, p≤0.0033 was considered significant.

Results. A total of 575 children ages 0 to 211 months met inclusion criteria: 51.8% (n=298) were male, and the median (IQR) age was 59 (14-93) months. Eighty-two percent (n=472) of participants had DF. CBC values across days 1 to 10 of fever in those with and without DF are depicted in Figure 1. Those with DF showed levels dropping more quickly across days of fever for hematocrit and hemoglobin (p<0.002), with a more rapid decline in those with severe DF (p<0.0001). Those with DF had levels increasing more quickly for mean corpuscular hemoglobin concentration (MCHC), monocyte number, and white blood cell counts (p≤0.003), with those with severe DF having a more rapid increase (p<0.001). The direction of the change across time differed by DF status for mean corpuscular volume and red blood cell distribution width (RDW) (p≤0.0003), with those with severe DF showing an increase in RDW across days of fever (p<0.0004).