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An Olympic Gold Moment for Central Coast Pathology

Submitted by: Marilyn Sarina, BMLSc, ART, MT (ASCP), CLS- Supervisor, Clinical Laboratory

There is no doubt that one of the most interesting aspects of working in Microbiology involves those rare occasions when we come upon an interesting isolate that will probably only be seen once in our careers. We like to think of it as "Our Olympic Gold Moment". This recent occurrence in our laboratory created an enthusiastic educational opportunity, to say the least.

Our excitement involved the isolation and identification of an organism termed the "Vietnamese Time Bomb" and the causative agent is *Burkholderia pseudomallei*. *B. pseudomallei* is an organism that has been considered as a potential agent for biological warfare and biological terrorism. The organism is an aerobic gram-negative bacillus that causes melioidosis, which is predominantly a disease of tropical climates. It is endemic in Southeast Asia, Northern Australia and other tropical and non-tropical regions. Today it can be imported to regions with inappropriate climate if a carrier capable of contaminating its surroundings survives. Transmission occurs by direct contact with contaminated soil and surface waters. Melioidosis manifests itself clinically as abscesses, pneumonia and at worst, as a fatal septicemia in susceptible hosts. The incubation period (time between exposure and appearance of clinical symptoms) is not clearly defined but may range from 2 days to many years.

Our case involved an abscess from the mid-finger of an otherwise healthy 27-year-old-female. The abscess was drained and a sample was sent to our laboratory for routine culture. We recovered a light growth of cream-colored colonies after 48 hours' incubation. By 72 hours, the colonies displayed a characteristic "cornflower" morphology (see image). Laboratory identification of *B. pseudomallei* can be difficult, especially in western countries where it is rarely seen. Biochemically, the isolate was motile, oxidase-positive, indole-positive, catalase-positive, arginine dihydrolase-positive and produced nitrate gas. Our automated identification system yielded an excellent biotype (97% probability) for *B. pseudomallei*. From this point onward, all subsequent manipulations were performed under a biological safety cabinet as a precautionary method. The isolate was then forwarded to the SLO Public Health Laboratory for confirmation of our findings. PCR (polymerase chain reaction) testing confirmed the identification as that of *B. pseudomallei*.



B. pseudomallei

Most cases of melioidosis can be treated with appropriate antibiotics and treatment should be initiated early in the course of the disease. It has been a common pathogen isolated from troops of all nationalities that have served in areas with endemic disease but is rarely isolated on U.S. soil in the absence of travel to endemic areas.

Beyond the Surface

Submitted by: *Stacie Horton, Quality Management Coordinator*



Central Coast Pathology underwent and passed our biennial, unannounced College of American Pathologists (CAP) inspection on May 14, 2010. The CAP inspection team, comprised of 9 laboratory scientists and physicians, reviewed every aspect of our laboratory. The CAP guidelines include thousands of specific criteria for all aspects of laboratory operations including overall management, safety, training, document control, quality assurance, information technology and specific criteria for all testing categories. Not only did we meet the rigid criteria but also received many positive comments on specific procedures. We are honored to be accredited since 2002.

The CAP Laboratory Accreditation Program is an internationally recognized program. The program and requirements are designed to go beyond regulatory compliance to promote achievement of the highest standards of excellence to positively impact patient care. There are approximately 6,000 CAP-accredited laboratories worldwide and over 83% of the top teaching and large community hospitals choose CAP as their accrediting agency. Because of their high standards, the CAP Laboratory Accreditation Program has deeming authority over federal and state regulations, JCAHO, FDA, and CMS.

By adopting the highest standards in the industry, we demonstrate our commitment to continuous improvement and patient care excellence.

Automated Slide Staining System

Submitted by: *Jaime McMillan- Director, Anatomic Pathology Services*



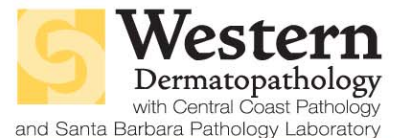
Central Coast Pathology has an extensive in-house immunohistochemical (IHC) stain menu, which are important in diagnosing disease states including melanoma, leukemia, and lymphoma.

Our histology department implemented Ventana Medical System's new BenchMark ULTRA automated slide staining system. The ULTRA is the next generation of IHC and in situ hybridization (ISH) staining instrumentation. This platform introduces the concept of single piece flow by using 30 individual slide processors to allow for continuous and random access.

This state-of-the-art system allows for efficient add-on tests and flexibility for histology staff to access urgent cases immediately upon completion without batch interruption. Turnaround times are significantly reduced, resulting in faster reporting of patient results and enabling the next generation in lean laboratory workflow at Central Coast Pathology.

Western Dermatopathology Corner

Submitted by: *Bruce D. Ragsdale, M.D.- Director, Western Dermatopathology*



The eventuation of a cyst following implantation of respiratory epithelium during a surgical procedure is a rare event, with only 7 prior cases reported in the mandible. Decades may pass before sufficient enlargement or secondary infection calls such a radiolucent lesion to attention. A 14-year-old white male underwent a LeFort I maxillary osteotomy for correction of developmental dentofacial deformity. Chin augmentation used "residual maxillary bone" as the donor tissue. Transplanted sinonasal mucosa into the mandible during orthognathic surgery was responsible for the painful anterior mandibular cyst (Fig. 1) lined by respiratory epithelium (Fig. 2) detected 16 years later. Essentially it grew into an intraosseous sinus where one was never meant to be. The cyst was surgically evacuated and reported by Ragsdale, Janette & co-workers in *Jnl Maxillofacial Path.* 2009;13(1):30-4.

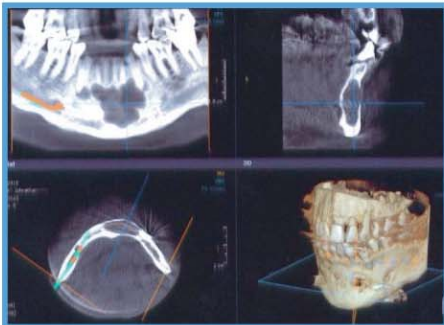


Figure 1

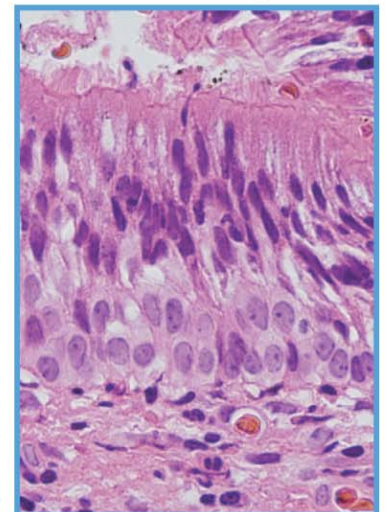


Figure 2

What's New in Women's Health?

Submitted by: *Shanda Green, B.S., CT (ASCP) and James Hannah, M.D.*

On May 6th, Central Coast Pathology hosted the Cervical Screening Symposium dinner program at F. McLintocks Restaurant in Shell Beach. Clinicians from both San Luis Obispo and Santa Barbara Counties attended this educational event focused on the latest ACOG screening guidelines for cervical disease. The guest speaker was J. Thomas Cox, M.D., the Immediate Past President of the American Society for Colposcopy and Cervical Pathology (ASCCP) and long-time Director of Women's Health at the University of California, Santa Barbara. Dr. Cox presented the principal changes in the new guidelines as outlined below.

Begin Cervical Cancer Screening at Age 21:

The average annual count of invasive cervical carcinomas in the United States from 1998-2003 was 14 in the 15 to 19-year-old age group. The incidence increases 11-fold after age 20, so most disease should be caught if screening begins at age 21. Adolescents also have a high rate of transient HPV infection. It is thought that the adverse psychological effects related to screening and treatment of abnormal results is harmful to patients who are likely to resolve the infection without intervention. In addition, LEEP treatment has been linked to dramatically increasing the rate of pre-term birth.

2-Year Screening Interval for Women 21-30 Years Old:

Most women can be screened every 2 years; however, exceptions exist. They are: women infected with HIV, women who are immunosuppressed (for example, transplant recipients), women exposed to DES in utero, and women previously treated for CIN 2, CIN 3 or cervical malignancy. For these women, extending the screening interval is not recommended.

3-Year Screening Interval for Women Over 30 Years Old:

Women over age 30 with 3 consecutive negative cervical cytology test results for intraepithelial lesions may be screened at 3-year intervals. The exceptions, however, are similar to the younger age group (patients with a history of CIN 2, CIN 3 or carcinoma; HIV +; or immunosuppressed) and should be screened at more frequent intervals. Adding molecular testing for high-risk HPV significantly increases the sensitivity of identifying at-risk patients in this age group (see below).

When to Discontinue Screening:

The incidence of cervical cancer in the fifth, sixth and seventh decades of life vary by race and economic status. A woman's past screening history must be taken into consideration when setting an upper age limit for screening. It is reasonable to discontinue cervical cancer screening at either 65 years of age or 70 years of age in women who have 3 or more negative cytology test results in a row and no abnormal test results in the past 10 years. Women who have undergone total hysterectomy for benign indications and have no prior history of high-grade CIN can discontinue routine screening. Women with prior history of CIN 2, CIN 3 and malignancy should continue screening even after post-treatment surveillance is complete.

The Role of HPV Testing:

There are 2 U.S. FDA-approved tests for HPV DNA. Using the same cells collected with the Pap test sample, the presence of 1 or more in a panel of 13 or 14 of the 15-18 HPV types that are linked to cancer is assessed. HPV DNA testing can be used to triage women 21 years and older with a diagnosis of ASC-US and postmenopausal women with a diagnosis of LSIL. In women older than 30 years, it provides an adjunct to cytology for primary screening. It can be used to follow up CIN 1 or a negative colposcopy combined with cytology diagnoses such as ASC-US, ASC-H, LSIL or AGC, and as a follow-up to treatment for CIN 2 and CIN 3. HPV testing should not be used after a cytology diagnosis of LSIL (in most age groups) or HSIL because HPV DNA is expected to be found in these women. HPV testing also has little use in women less than 21 years of age due to high rates of transient infection. If performed, a positive result should not influence management for these women. To reiterate: HPV infections are most common in teenagers and women in their early 20s. In this same group, infection and dysplasia are more likely to resolve spontaneously. Prevalence of HPV infection decreases as women age, but HSIL rates increase. Thus, HPV infection found in older women is more likely to reflect persistent infection that was acquired in the past and is considered to be more significant. Testing for high-risk HPV using the Digene Hybrid Capture 2 High-Risk HPV DNA test is particularly helpful in triaging patients over the age of 30 because of its relatively high sensitivity. However, it has limited specificity and therefore should be used in conjunction with the routine Pap test (visit <http://www.ccpathology.com/physicians.asp> for above case images and links to ACOG & ASCCP).

ACOG reminds us that these guidelines should never substitute for clinical judgment. Clinical judgment should always be used when applying a guideline to an individual patient because it is impossible to develop guidelines that apply to all situations. A search of the last 5 years of the gynecological biopsy archives at Central Coast Pathology supports this. Some unusual cases were noted including a 21-year-old with vulvar squamous cell carcinoma and a 28-year-old with microinvasive squamous cell carcinoma of the cervix but negative HPV DNA results.

Free Cholesterol testing available at all Central Coast Pathology patient service centers. (Once-annual courtesy for patients)

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Santa Maria

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Central Coast Pathology is proud to maintain accreditation by the College of American Pathologists for conducting the highest quality level of anatomic pathology and clinical laboratory testing.

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