

2<sup>nd</sup> Annual Congress on  
**Microbiology and Microbiologists**  
&  
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**Mycology and Fungal Infections**  
October 07-08, 2019 | Madrid, Spain

Poster



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## **Aetiology and clinical profile of acute bacterial meningitis in children less than 12 year admitted at a tertiary care hospital in North India**

**Jyotsna Agarwal, Palak Mehrotra, Sugandha Srivastaava and Mala Kumar**

Dr. Ram Manohar Lohia Institute of Medical Sciences, India

Acute Bacterial meningitis (ABM) is amongst most common causes of morbidity & mortality in children in developing countries; delay in diagnosis and initiation of inappropriate antibiotics further adds to fatal outcome or long-term neurological sequelae. The present prospective observational study was conducted to know the etiology and epidemiologic risk factors associated with ABM among children in a tertiary care hospital of North India to ensure early and appropriate management. Out of total 225 patients enrolled, 118/225 patients fulfilled criteria of Nelson book of Pediatrics and WHO were enrolled in NICU (age group ranges from day 1 to  $\leq 4$  weeks), whereas 107/225 patients were enrolled from CHDS (age group ranges from  $> 4$  weeks to 12 year); respectively. For each suspected case, demographic data, predominant clinical signs and symptoms, prior history of use of antimicrobial agent, and laboratory results was recorded in pre-designed questionnaire. CSF samples were subjected to direct wet mount, Gram staining and bacterial culture followed by Antimicrobial sensitivity testing (AST) by Kirby Bauer disk diffusion method and results were interpreted as per CLSI (2015). Mean age of both NICU and CHDS cases were  $7 \pm 6.9$  days and  $4.94 \pm 3.3$  years with female: male ratio as 1.87:1 and 1.60:1 respectively. In NICU patients, elevated CSF protein ( $>100$ mg/dl) was present in 31.3% and decreased CSF glucose ( $<40$  mg/dl) were found in 61.8% whereas 80.5% had increased cell count and were significantly associated with culture positivity ( $p=0.001$  and  $p=0.008$ ), respectively. Most common predisposing factors in mother was maternal fever (47.7%), leaky per vagina (40.9). Our result showed that *S. aureus*, *E. coli*, *Enterococcus faecali* and *CoNS* were highly predominant gram positive bacteria in children age  $>12$  years followed by gram negative bacteria *Acinetobacter spp*, *Klebsiella pneumoniae*, *E. coli* and *Pseudomonas aeruginosa*. Proper vaccination for *N. Meningitides*, *S. Pneumoniae* and *H. Influenzae* type b in developing countries have shown the less predominancy of these pathogens isolated from ABM. Antibiotic susceptibility pattern of showed that *Gram positive cocci* were mostly sensitive to Vancomycin, linezolid followed by amikacin and gentamycin. All GNBs isolated in the present study were sensitive to colistin followed by meropenem and imipenem. Hence, this type of studies should be done on large scales to gather data for formulation of regional disease specific policies.

### **Biography**

Jyotsna Agarwal is working in the area of patient care and diagnostics. Currently she is working as Head in the Department of Microbiology, Dr. Ram Manohar Lohia Institute of Medical Sciences. Her thrust areas of interest are sexually transmitted/ reproductive tract/urinary tract infections in women. Her other research interests are antimicrobial resistance in microbes, molecular diagnostics and focus areas have been infections of children like pneumonia, septicemia & meningitis. She has nearly 60 publications in indexed national and international journals and also worked as Editor and Reviewer for several reputed National and International journals. She took keen interest in "Hospital Infection Prevention, Control Practices and Antimicrobial stewardship Program" and provides advice on prevention of misuse of antimicrobials in hospital settings. An Annual newsletter from the Department of Microbiology, Dr. Ram Manohar Lohia Institute of Medical Sciences is published in her guidance, which contains antibiograms and other relevant information pertaining to infection control etc.

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## Study on stability of soil *Pseudomonas* and *Xanthomonas* plasmids possessing antibiotic resistance genes

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The emergence of multidrug-resistant (MDR) *P. aeruginosa* is a critical problem in medical practice, however the key features involved in the emergence and spread of MDR *P. aeruginosa* remain unknown. Plasmids play the main role in rapid dissemination of resistance and virulence genes by mechanism of genes horizontal transfer. The spread of antibiotic resistance (ABR) has close relations with stability of plasmids possessing that features. To control the process of dissemination of MDR strains it is important to understand how resistance genes remain stable in environment.

The stability of plasmid isolated from MDR soil *Pseudomonas* and *Xanthomonas* strains has been studied. All studied strains are included in culture collection of MDC SPC "Armbiotechnology" NAS RA. The MDR and the presence of *bla*OXA-10, *aac*(6')II, *aph*(3')IV in the genome of these strains were studied earlier.

Plasmids isolated from MDR strains were used for transformation of sensitive *P. aeruginosa* 9056 strain and *E. coli* DH5a strain. Antibiotic resistant colonies have been selected and passed over series of cultivation in antibiotic-free medium in order to determine loss of plasmids (resistance). Results are presented in the Table.

Plasmids containing in *P. aeruginosa* 9056 transformants have demonstrated high level of stability. However, *E. coli* transformants have lost ABR after transfer to antibiotic medium. Thus, probably stability of *Pseudomonas* and *Xanthomonas* ABR plasmids is under the host control.

### Biography

Nelli Hovhannisyan has her expertise in biotechnology. The one of her scientific interests is combat against multidrug resistance bacteria maintenance and spread in environment. She has experience in research, teaching and administration in education institutions including Universality. As a head of Ecological safety lab, she manages the projects connected with ecology and biotechnology.

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## **Wasps venom new trend for treatment of cancer, microbial and pathogenic diseases**

**Mamdouh Nassar and Emad M Elzayat**

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Cancer is one of the main causes of death worldwide. For experts, epidemiological trends continue to be alarming given the increases in the rates of incidence and mortality. Nowadays, tumors are treated with radiotherapy, surgery and chemotherapy. The side effects derived from anti-tumor compounds are a result of their low specificity. On the other hand Parasitic and pathogenic diseases are relentlessly progressive, affected all living organisms. Wasp venom may deliver a painful sting, but scientists have carried out successful *in vitro* tests using the Wasps venom to kill cancer cells and antimicrobial diseases. Scientists designed a new therapy based on a peptide - the binding of several amino acids peptides from wasp venom for its potential use against breast cancer. This peptide has the ability to form pores in the cell plasma membrane, penetrate into the cell and finally, cause its death. Wasp Venom has long been used in traditional medicine. The active components of Wasp Venom found to exhibit interesting bioactivities, such as antimicrobial, anti-inflammatory and antioxidant activities as well as anti-tumors. In this respect, the present review for understanding of the mechanisms, mode of action and future prospects regarding the use of new drugs derived from wasp venom for treatment cancer, microbial and pathogenic diseases.

### **Biography**

Mamdouh Nassar was born in Cairo. He graduated a Bachelor's Degree from Biology (zoology, botany, and toxicology) Department, Faculty of Science, Cairo University. received his MSc Degree in from the same University. PhD degree (channel system) between University of Maryland College Park (USA) and Cairo University. He had many studies for field of sleeping sickness and malaria diseases of vectors stomoxys calcitrans and anopheles in USA Florida, jazan and jeda. staff member program (visitor exchange), University of Maryland College Park, USA. He is a professor of biological sciences at Cairo University, King Abd-Alziz, University Jazan and King Khalid Universities. He was worked at laboratory staff, for dietary microbiology at environmental system service, Beltsville, USA.

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## Case report: Primary laryngeal cryptococcosis in an immunocompetent person

**Beenish Syed, Sadia Amir and Siddiqa Saeed**

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**Statement of the Problem/Background:** *Cryptococcus sp* is encapsulated yeast, found in the environment and bird excrement. Cryptococcal infections are uncommon in immunocompetent patients and Primary Laryngeal cryptococcosis is a rare condition. Inhaled corticosteroid use is the most common predisposing factor, causing localized immunosuppression and disruption of laryngeal mucosal barrier. We present here a case of Primary Laryngeal Cryptococcosis in a patient on prolonged inhaled steroids.

**Case discussion/report:** A 71 year's old male, known case of hypertension and asthma presented with complaints of hoarseness of voice for 5 months, progressively increasing, painless and ultimately leading to aphonia. He was taking inhaled corticosteroids for last 15 years. Physical examination showed no swelling or enlarged lymph nodes in the neck and oropharynx was also normal on gross examination. Patient was evaluated with fiberoptic laryngoscopy (FOL) which showed bilateral irregular thickened, swollen vocal cords with granulation tissue. Histopathology showed: Rounded narrow based budding yeast with thick capsule on PASD stain suggestive of *Cryptococcus*. HIV serology was negative. Serum cryptococcal antigen titers were raised (1:4). Patient was started on oral Fluconazole 400 mg once daily. Dose of inhaled steroids was reduced. Patient responded to the treatment with improvement in his voice after 4 weeks and cryptococcal antigen titers were reduced to 1:1. No neurological involvement was found on further investigations.

**Conclusion:** Use of inhaled steroids for prolonged periods is a significant risk factor for laryngeal cryptococcal infection. Fiberoptic laryngoscopy and histopathological examination with appropriate staining enables accurate diagnosis. Treatment with oral antifungal agents, most commonly high dose oral fluconazole is shown to be effective. Prolonged duration with minimum of 6-8 weeks is generally required. Surgical treatment may be necessary if indicated. No guidelines exist in literature whether these patients should be followed clinically or with repeat FOL to document resolution of lesions.

### Biography

Beenish Syed is an Infectious Disease specialist based in Karachi, Pakistan. She did her post-graduate training in Internal Medicine (FCPS) in 2014 and then in Infectious Diseases (FCPS) in 2017. She is currently working as Assistant Professor and Infectious Diseases Consultant at Liaquat National Hospital, Karachi, one of the leading undergraduate and post-graduate training institutes in Karachi, Pakistan. She is an integral part of Infection Control and Antimicrobial Stewardship committee at her institute.

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**Accepted Abstracts**



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## Novel treatment of disseminated *Coccidioidomycosis* in a dog with voriconazole

**Chantel Raghu, Care Center, USA**

Chris Reagh, Oxford Veterinary Hospital, USA

*Coccidioides* is endemic in some areas of the southwestern United States, Mexico, and South America, and it was most recently found in south central Washington. The treatment of choice for *Coccidioides* in humans depends on severity, chronicity, and anatomic involvement. In humans, fluconazole is the agent of choice and amphotericin B is often used for rapidly progressive coccidioidal infections. Newly available antifungal drugs that may be beneficial in refractory cases include voriconazole, caspofungin, and posaconazole. There have been a few case reports and one case study documenting successful treatment of disseminated *Coccidioidomycosis* in human patients using voriconazole. In dogs, management of *Coccidioidomycosis* involves long-term antifungal drug treatment, typically with azoles such as ketoconazole, itraconazole, or fluconazole. Amphotericin B is recommended in cases of severe, diffuse pulmonary infections to achieve a faster onset of action when compared to azoles. Dogs with disseminated *Coccidioidomycosis* carry a grave prognosis despite standard treatment with fluconazole. This case report describes the successful management of a dog with disseminated *Coccidioidomycosis* involving the skeletal, cutaneous, and pulmonary systems with voriconazole after failing traditional therapy with fluconazole and terbinafine. This report is the first to describe the successful management of refractory *Coccidioidomycosis* with voriconazole in a dog.

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**Molecular and morphological identification of isolated fungal pathogens from infected *Nephelium lappaceum* L. (RAMBUTAN)**

**Alvarez Lourdes V, Tamada, Alyssa Marin C, Pagud, Rhenzie O**

Polytechnic University of the Philippines, Philippines

*Nephelium lappaceum* L. (Rambutan) is a staple, seasonal tropical fruit that has both economical and medicinal value. It is a fragile fruit that is sensitive to environmental and pathologic conditions. Considering the factors involved, the primary reason for fruit rot is due to pathogenic fungi which cause infection and diseases. This study identified the fungi isolated from the symptomatic leaves and fruits of rambutan. Infected plant samples were collected from a farm in San Juan, Sta. Cruz, Laguna. Symptomatic tissues from leaves and fruits were cultured in potato dextrose agar and then transferred to malt extract agar to aid sporulation. The fungal isolates, after subjecting for pathogenicity test, were characterized using the partial Internal Transcribed Spacer (ITS) region and morphological analysis. DNA sequences of the isolates were subjected to phylogenetic analysis using Mega v.7 software with reference sequences from the GenBank. The fungal pathogens were identified as *Aspergillus aculeatus*, *Fusarium fujikuroi*, *Lasioidiplodia theobromae*, *Neopestalotiopsis clavisporea*, *Pestalotiopsis microspora*, and *Trichoderma afarasin*. The latter was found to be not pathogenic but exhibits biocontrol potential in plant host. Phylogenetic findings showed that there is a high correlation of each isolated species to the published identified sequences in GenBank. The use of multilocus analysis which may strengthen the species identification as well as testing the pathogenicity of the fungal isolates to rambutan fruit is highly recommended.

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**Biofilm formation by *Candida albicans* and *Candida glabrata* under acidic conditions: Implications on vulvovaginal candidiasis**

**Bruna Gonçalves, Nuno Miguel Azevedo, Liliana Fernandes, Mariana Henriques and Sónia Silva**  
University of Minho, Portugal

Vulvovaginal candidiasis (VVC) affects millions of women every year and is considered an important public health problem. VVC is mainly caused by *Candida albicans*, but *Candida glabrata*, which is a species with intrinsically high resistance to common antifungals, has been increasingly identified in women with VVC. The high incidence of VVC and difficulty in its treatment, make it crucial to increase the knowledge on *Candida* vaginal virulence. Contrary to most other pathogens the vaginal acidity does not prevent *Candida* infections, to which *Candida* biofilm formation, on mucosa or intrauterine devices, may contribute. Thus, the aim of this study was to analyse the biofilm formation and matrix composition of *C. albicans* and *C. glabrata* vaginal isolates at pH 4, promoted by lactic acid, comparatively to a neutral environment. *Candida glabrata* strains presented increased ability to produce biofilms at acidic conditions suggesting high adaptability to the vaginal environment. In contrast, *C. albicans* strains presented lower biofilm quantity and filamentation at acidic conditions, what may suggest an acidic-induced biofilm dispersion that may contribute to the dissemination of an infection. Additionally, the biofilm matrix composition was significantly affected in both species, in general presenting lower quantity of components at acidic conditions. A high-throughput mass spectroscopy analysis of *C. glabrata* biofilm matrix proteins, which were not investigated before in this species, revealed 397 different proteins at acidic conditions and 606 at pH 7. Importantly, the acidic conditions were found to induce and block the secretion of 71 and 280 proteins, respectively, to the matrix. This study shows that acidic conditions have a specific and relevant modulation of virulence features of *Candida* species. As such, the identification of species-specific virulence determinants that may settle the ability of *Candida* species to survive in the vaginal environment may contribute to the disclosure of new targets to treat VVC.

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## **The effect of the combinations of antibiotics and natural products on the antimicrobial effect for combating bacterial resistance**

**Afaf S Eladl**

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The steadily increasing in bacterial resistance to existing antimicrobial drugs is a serious problem, and therefore there is a dire need to search for new approaches of bacterial treatment. The use of antibiotics alone sometimes does not produce the effective inhibitory action. To overcome this problem, a combination of drugs often used. One approach to treat infectious diseases is the use of combination of antibiotics together or with plant extracts. Combination therapy is helpful and useful for patients with serious infections caused by drug resistant pathogens.

Seven classes of antibiotics were purchased from local pharmacy (gentamicin, ceftazidime, ciprofloxacin, doxycycline, amoxycillin, ceftriaxone, and azithromycin). MICs were calculated and different antimicrobial combinations were studied on 20 clinical isolates (10 *S. aureus* and 10 *P. aeruginosa*). Also, the antibacterial activity of limonene, rosemary, salvia, thymol, thymus, capsicum, black piper, moringa seed, curcumin and chitosan were detected against *S. aureus* and *P. aeruginosa* using broth microdilution method.

Our results revealed that the combination of ceftriaxone with either gentamicin or ciprofloxacin for *S. aureus* was significantly synergistic. Also the combination of amoxicillin with ceftazidime was synergistic and exhibited decrease of MIC by 5-6 folds. The combination of azithromycin with doxycycline exhibited decrease of MIC of azithromycin about 5-6 folds.

Our MDR clinical isolates of *P. aeruginosa* showed that the combination of gentamicin with ceftriaxone was significant. Thymol, rosemary oil and moringa seed extract exhibited the highest antibacterial activity.

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## **Deadly rabies diagnosis post one year of viral transmission from dog's bite: A case report**

**Rafa Aidya Saraswati**

TC Hillers General Hospital, Indonesia

**R**abies is a zoonotic viral infection disease targeting CNS. This disease is mortal, 99% of the patients diagnosed end up die, transmitted from rabid animal hosts, mostly dogs. Globally, it has its own endemic areas, including Indonesia, of 34 provinces, 24 had reported rabies case. Until now, there is no cure for the disease, it can only be prevented by vaccine injection. Theoretically, the incubation period range from 20-90 days. In this case, it was 1 year, proven virus can be differ in behavior (reproduction and travel time).

**Case Descriptions:** On September 2017, 51 years old woman was referred from primary healthcare as brought by her husband complaining of change in his wife's behavior. She was tend to be agitated and uncooperative. In the ambulance, she was fidgety when the wind touched her skin. Turning out she had history of unknown dog's bite one year prior and didn't seek for any vaccine injection.

**From anamnesis and physical examination:** she was alert although seen restless. Every words she said were still in the right sense and in accordance with the questions. Her vital sign was stable with positive results on aerophobic and hydrophobic test. Other physical and neurological examination showed no abnormalities. Twelve hours after, the patient didn't survive.

**Discussion:** Several differential diagnoses can be considered with chief complaint of agitation: metabolic, neurological, psychological, and infectious disease. Patient history of rabid dog's bite without vaccine injection still made uncertain rabies diagnosis because of a long-time incubation period. For every examination and supportive test possible showed no tendency on other DD, specific aerophobic and hydrophobic test were performed with positive results. This case had proven one-year-post-viral transmission can be resulted to rabies.

**Conclusion:** Needs further investigation. How can the virus be varied in incubation period and if there is any specific factors underlie the condition.

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**Chemical composition and antibacterial activity of *Ageratina jahnii* and *Ageratina pichinchensis* essential oils collected in Mérida, Venezuela**

**Janne Rojas, Torres Lizzeth, Alexis Buitrago, Judith Velasco, Antonio Morales, Luis Rojas and María Lucena**  
University of Los Andes, Venezuela

**Statement of the Problem:** *Ageratina* genus belongs to Asteraceae family and is distributed in Colombia, Ecuador, Guatemala, México, Panamá and Perú. In Venezuela are located at Amazonas, Aragua, Bolívar, Distrito Federal, Monagas, Zulia, Táchira, Mérida and Trujillo, mainly between 1000 to 3850 m.a.s.l. Species of this genus have been used in traditional medicine for the treatment of superficial mycosis, skin infections and wounds, as well as for its analgesic activity. Previous investigations have revealed anti-inflammatory, antiviral, antibacterial and larvicidal activities either in extracts or isolated compounds from different *Ageratina* species. Present investigation aims to compare the chemical composition and evaluate the antibacterial activity of essential oils of *A. jahnii* and *A. pichinchensis* collected from Mérida-Venezuela.

**Methodology & Theoretical Orientation:** Fresh leaves of each species were cut into small pieces and submitted to hydrodistillation for 4 h, using a Clevenger-type apparatus. The oils were dried over anhydrous sodium sulfate and stored at 4 °C. Gas chromatography-Mass spectrometry (GC-MS) analyses were carried out on a Hewlett Packard GC-MS system, model 5973. The identification of components was based on a Wiley MS data library (6th ed), followed by comparisons of MS data with published literature. The antimicrobial assay was carried out according to the disc diffusion method. MIC was defined as the lowest concentration that inhibited the visible bacterial growth.

**Findings:** Essential oil from leaves of *A. jahnii* (AJ) and *A. pichinchensis* (AP) yielded 0.50% and 0.43 % w/v, respectively. The major components identified in AJ were  $\beta$ -myrcene,  $\alpha$ -pinene and limonene while for AP 8,9-epoxythymyl isobutyrate, germacrene-D, thymyl isobutyrate and enecalol were observed as main compounds. Essential oils showed antibacterial activity against *S. aureus* and *E. faecalis* with MIC values of 49.5  $\mu$ l/mL for AJ and 104  $\mu$ l/mL for AP.

**Conclusion & Significance:** Now days the study of antibacterial agents has become an important issue, due to the constant development of resistance from microorganisms to conventional antimicrobials. Consequently, search for new agents, those of plant origin must be emphasized, thus, results observed in this investigation might be of interest for the natural products research.

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**Correlation between Biofilm Formation and the presence of extended spectrum  $\beta$ -lactamase bla *PER1* gene in multiple drug resistant clinical isolates of *Acinetobacter baumannii***

**Nouran Magdy Mohamed Moustafa**

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**Statement of the Problem:** *Acinetobacter baumannii* (*A. baumannii*) is responsible for most hospital acquired infections. Among the most important *A. baumannii* virulence factors, is its ability to produce biofilm, which relates to its high degree of antibiotic resistance and survival in hospital environment.

The purpose of this study is to identify the ability of different *A. baumannii* isolates to produce biofilm, and whether this correlates to multidrug resistance and the presence of blaPER-1 gene.

**Methodology & Theoretical Orientation:** A total of 30 isolates of *A. baumannii* were subjected to susceptibility testing by disc diffusion method for 10 clinically relevant antibiotics followed by phenotypic detection of ESBL production by double disc synergy test (DDST). MIC for imipenem was performed by E-test. Screening for biofilm formation was done by microtitre plate assay. The presence of blaPER-1 was investigated by PCR.

**Finding:** *A. baumannii* isolates showed high rate of resistance to the tested antimicrobials. 97.6% were ESBL producers. Sixteen isolates (53.3%) were biofilm producers. There was no significant relation between biofilm formation and MDR. blaPER-1 gene was detected in fifteen isolates (50%) but showed non-significant correlation with biofilm formation and ESBL production.

**Conclusion:** This study demonstrates the increasing likelihood of *A. baumannii* isolates to form biofilms. There is no significant association between biofilm formation, MDR and blaPER-1 gene.

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**Concurrent phaeohyphomycosis in canine superficial pyoderma associated with *Pseudomonas aeruginosa***

**Vinod Kumar Singh, Amit Kumar, Rudra Pratap Pandey, Sharad Kumar Yadav**  
Deen Dayal Upadhyaya Veterinary Science University (DUVASU), India

**Background:** Skin affections in canines are common and their successful treatment usually depends upon the pathogens involved. Delayed or no response to traditional treatment indicates the involvement of unusual etiology or the multidrug resistance.

**Objective:** To describe the diagnosis and therapeutic management of a rare case of phaeohyphomycosis with concurrent superficial pyoderma in a Doberman pinscher dog.

**Methods and results:** A 12-month old Doberman pinscher male dog with complete alopecia of lower jaw and neck region and hair loss in moth-eaten pattern on the chest and legs. Diagnosis was based on clinical examination and microscopy and culture of skin lesions followed by PCR and sequencing confirmation. Treatment consisted of a combination of systemic antifungal and antibacterial therapy selected on the basis of *in-vitro* antimicrobial susceptibility test along with the tropical therapy including skin soother spray containing tea tree oil, aloe vera and vitamin E and bathing with shampoo containing ketoconazol and chlorhexidine leading to complete recovery.

**Conclusion:** At a 12-month follow-up, the dog remains well, no hair loss occurred and there has been no recurrence of the cutaneous lesions. To the authors' knowledge, there are no previous reports describing concurrent *A. alternata* and *P. aeruginosa* cutaneous infection in a dog. Further studies and documentation on opportunistic fungi are needed to better understand the risk factors associated with pathogenesis and optimal treatment of these uncommon infections.

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