

Issue 7, Published May 2020

NEWSLETTER

Dedicated to All The Frontline Covid-19 Workers

















Dr. Ram Manohar Lohia Institute of Medical Sciences Lucknow



Department of Microbiology



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Prof. (Jr.) Vineeta Mittal Mycobacteriology & Immunology Incharge



Prof. (Jr.) Manodeep Sen Bacteriology, Parasitology & Hospital Infection Surveillance Incharge



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Cover page features Covid-19 lab technical staff (from top middle in clockwise manner): Mr. Santosh Kumar, Mr. Debashis, Mr. Lokesh, Mr. Satyam, Mr. Sunil, Mr. Anurag, Mr. Fanish



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Prof. A.K. Tripathi

MD., FRCP (London), FRCP (Glasgow), FRCP (Ireland), FAMS, FICP, FISHTM, FIACM, NIH Fellow (USA), WFH Fellow (UK) **DIRECTOR**

Ref. No.-Date-

Message from Director



It is a moment of immense pleasure to learn that Department of Microbiology, Dr. Ram Manohar Lohia Institute of Medical Sciences is organizing a CME on the theme "Unraveling the mystery of Covid-19" on 21st March 2020 and also bringing out their 7th Annual News Letter of the Department of Microbiology for the year 2019.

A very pertinent topic has been taken up by the Department of Microbiology, when the novel Corona virus, named as 'Covid-19' has been declared a global emergency by the WHO. In the past few months we've witnessed a situation of global concern and unrest created throughout the world. Since there is no specific treatment or vaccine against this virus, the only measure to limit or control the Covid-19 is awareness about the mode of spreading of infection and measures to be taken once this is suspected. On the other hand, one should always be careful that the information may not create panic among masses.

So the theme chosen by the microbiology department is a very important one at this hour of time. I am sure the CME on the theme, "Unraveling the mystery of Covid-19" organized by the department of Microbiology will serve a food for thought to sensitize the Microbiologists & Clinicians attending the CME, and also spread the message to the masses.

Annual 7th issue of microbiology newsletter of the Department of Microbiology is released today, which also serves as a handy tool to our clinicians, with the local antimicrobial data of the institute.

I congratulate all the Faculty members & staff of the Department of Microbiology for organizing a CME on such an important theme and bring out their annual newsletter.

(Prof. A.K. Tripathi) 5/3/ bor

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Message from Dean



I am pleased to note that the Department of Microbiology, Dr Ram Manohar Lohia Institute of Medical Sciences, Lucknow is organizing a CME on "Unravelling the mystery of Covid-19" a topic of significant current relevance; and also releasing their 7th

Annual News Letter for the year 2019 on 21ª March 2020.

The beginning of the year 2020 has been marked by panic and unease due to the rapid spread of a new Corona virus, now named as Covid-19. The subject is riddled with controversies and queries. I sincerely hope this CMT will bring forth some clarity on the microbe and the pathogenesis, diagnosis and management of this dreaded disease, which is fast developing into a global pandemic. I would like to put on record my appreciation of the Dept of Microbiology for their enthusiastic contributions to academics as well their high-quality diagnostic output. The annual antibiogram data in their newsletter will aid in facilitating our Institute's patient care services, which have made a mark in field of health care in Uttar Pradesh and the country.

I congratulate all the Faculty members, residents and staff of the Department of Microbiology for organising this CME & for publishing their newsletter. I wish the department progress and newer heights.

(Nuzhat Husaín) Dean





Dr R Bhatnagar Professor & Head Department of Anatomy Executive Registrar Dr.Ram Manohar Lohia Institute of Medical Sciences, Vibhuti Khand, Gomti Nagar, Lucknow.

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Message from Executive Registrar



It is indeed a very happy moment to announce the annual CME of the Department of Microbiology Dr. Ram ManoharLohia Institute of Medical Sciences, on a very appropriate theme, "Unravelling the mystery of Covid-19" and release of their Annual 7th issue of News Letter for the year 2019.

Department of Microbiology has been organising annual CME's on various justified and pertinent issues thus playing a pivotal role in improvising patient's health care. The topic chosen for this year's CME is a must know not just for the health care professionals but for the common masses as well.

I congratulate the entire Department of Microbiology for organising this CME, and I wish all the attendees of the CME a very enjoyable and academically enriching experience.





Dr. Ram Manohar Lohia Institute of Medical Sciences, Vibhuti Khand, Gomti Nagar, Lucknow. Phone no. : 0522 4918555, 4918504, 2991411 Fax no. 0522 4918506

Message from Medical Superintendent



I am immensely happy to note that the department of Microbiology, Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow is organising a CME on a very pertinent topic "Unravelling the mystery of Covid-19" & also releasing 7th Annual

News Letter of the Department of Microbiology for the year 2019 on this occasion.

The various CME's conducted on the relevant topics in health care helps to sensitise the Faculty, residents, students as well as the paramedical staff of the Institute, which in turn will improve the patient care services of the super speciality institute & enrich academics of the institute.

I congratulate and extend my warm wishes to the Department of Microbiology for organising the CME & release of their Annual Microbiology News Letter.



From Editor's Desk

What a turn around of events!!

In December of 2019, when we first started thinking of a virology themed CME for the Annual News Letter release, little did we know what was in store! Since then life has changed so much, for all of us. In midst of all this if there is one thing I can be proud of, is the fact, that we took the challenge face on and built a Biosafety level II lab from scratch and started Covid-19 diagnostic testing within a month. I am grateful for the faith and support of our Director Prof. A. K. Tripathi in helping us establish the Covid-19 lab. I fail to find words to express my gratitude to my team of **Covid Warriors**, including attendants, data operators, technical staff, residents & faculty Dr. Manodeep, Dr. Anupam & Dr. Jaya. This fight couldn't have been fought without you all. Covid-19 has brought us Microbiologists to the forefront of health care system, we hope to continue doing our bit with utmost sincerity.

The final pdf version of the news letter was ready on March 10th, just short of going to print for the release on 21st March! We deferred it of course, but now in a collective decision we have decided to release it online with a new cover page as a tribute to covid-19 Lab Warriors.

As usual our Annual News letter contains Antibiograms for antibiotics and antifungals, based on data collected from January through December 2019. It also has laboratory data for tuberculosis, virology and serology etc; and some interesting case reports and other relevant information. We acquired MALDI-TOF in the month of June 2019. And since then the landscape of diagnostic stewardship has taken a new turn with a rapid, accurate and cost effective bacterial identification, enabling us to bring down the cost of automated culture ID and AST. In order to facilitate use of MIC guided antimicrobial therapy, we have incorporated resistance break points for all antibiotics, in the report itself.

Department has taken lead in Resident Development Program of our Institute, and modules on 'Specimen collection' and 'Hand hygiene, BMW collection & disposal, Standard Precautions' are entirely taught by our faculty. We have been able to put together a Resident Orientation Program for new MD (Microbiology) joinees, with a series of lectures including "Do's and Don'ts in lab, Making a power-point presentation" etc. For last three years we have been able to live webcast the webinar organized by Indian Association of Medical Microbiology on 'World Sepsis Day', for our faculty and residents. Our second year MD students are regularly participating in ward rounds with Faculty in-charge ICU; and it's turning out to be a big learning exercise for them. Our first batch of MBBS (2017 batch) took their second professional exams in February 2019. We were able to carry out quite a few interactive teaching learning sessions with this batch in form of MBBS seminar and quiz, meticulously organized by Dr. Vineeta and Dr. Anupam/Dr. Jaya. We also organized a Rangoli competition/Slogan recitation on 'World Hand Hygiene day' for MBBS students, and got overwhelming response.

These are difficult times. Emergence of SARS-COV-2 on one hand exposed weaknesses in our health care system preparedness and its inability to tackle a problem of this magnitude; at the same time showcased our resilience to take up the challenge. There are countless lessons to be learnt and knowledge gaps to be filled. With myths and WhatsApp fake circulations doing rounds, one needs to be careful about what to assimilate and what to trash; onus specially lies on the Medical Fraternity.

Everyone stay safe and stay strong.

Dr. Jyotsna Agarwal Professor & Head

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Micafungin

NEWSLETTER May 2020



Newsletter, Department of Microbiology, Dr. RMLIMS, Lucknow





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		46	48	85		58	91	100	16	44	21	9	3	33	91	96	87	36		
-		120	50	87		55	89	95	27	44	25	5 8	4	77	98	99	83	49		
	CoNS	34	53	71		62	86	90	27	32	39	7	4 (67	97	100	74	55		
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	Lactose fermenters	100	17	29	45	38	48	23	37	56	62	30	28	29	50	9	23	50		
		323	13	15	29	25	33	12	45	47	54	30	17	16	57	5	24	42		
		44	7	16	33	21	34	11	33	48	41	19	16	12	42	12	20	27		
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		50	52	60	4	47	46	47	69	42	65	51	57	, e	61	52	46	65		
		60	66	67	4	46	47	64	87	62	53	63	79) 5	55	62	68	63		

*Pus, Pus swab, Catheter tip, CVP line, Shunt, Tissue, Bone marrow, Vaginal fluid, Semen, Ear discharge, Ear swab, Endometrial discharge, Vaginal swab, Stool, Urethral swab



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	Number	PENI	рох	тет	TEICO	ЧL	VA	LZ	HLG	FOS
Enterococcus	91	46	52	22	85	74	81	95	31	13
faecium	84	67	29	13	96	88	82	98	50	15
Enterococcus	37	67	32	8	95	92	86	97	41	73
faecalis	93	82	35	17	97	91	93	96	45	71
Enterococcus	339	8	38	13	94	83	93	95	46	86
Spp.	158	35	52	23	77	59	76	91	27	65
	43	21	60	26	70	56	67	79	16	49
	183	69	36	17	96	87	94	95	54	86

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Dr. RMLIMS Hospital Surveillance for Infection Control, 2019

S. No.	Site	Number of Air Culture	Total Swabs	S. No.	Site	Number of Air Culture	Total Swabs
1	Onco OT 1	24	96	16	Neuro OT 1	24	96
2	Onco OT 2	24	96	17	Neuro OT 2	24	96
3	Onco HDU	24	96	18	Neuro HDU	24	72
4	Gastro OT 3	24	96	19	Hemo Dialysis Unit 1	7	30
5	Gastro OT 4	24	96	20	Hemo Dialysis Unit 2	7	14
6	Gastro HDU	24	72	21	Isolation Ward 1	7	14
7	ICU 1 st Floor	12	108	22	Isolation Ward 2	7	14
8	Nephro Ward	4	28	23	Gastro Medicne Ward	8	40
9	Endoscopy Unit	6	36	24	CVTS ICU	10	44
10	Uro OT 1	24	96	25	Neuro Surgery Ward	1	5
11	Uro OT 2	24	96	26	Medical Oncology Ward	4	20
12	Uro HDU	24	72	27	Cath Lab	4	18
13	Pain OT 1	9	39	28	Peritoneal Dialysis Unit 1	3	6
14	Emergency OT	11	55	29	Peritoneal Dialysis Unit 2	4	8
15	Emergency Ward	1	5				

Surveillance work from Maternal & Child 200 bedded Hospital and Erstwhile Dr. RML Combined Hospital

S. No.	Site	Number of	Total
		Air Culture	Swabs
1	Neonatal ICU	7	38
2	Pedia Endoscopy Unit	6	17
3	Elective OT 3 rd Floor	13	51
4	Emergency OT 1 st Floor	21	62
5	Gynae Ward 1 st Floor	1	4
6	Pediatric ICU	2	40
7	Emergency Gynae Ward	3	16
8	Dr. RML Combined Hospital	94	516
	(presently merged with Dr		
	RMLIMS)		

Surveillance work from District Hospitals of Lucknow and Adjoining Areas

S. No.	Center	Total Swabs
1	LokBandhu Referral Center, Lucknow	148
2	VeerangnaJhalkariBai Referral Center, Lucknow	184
3	Rai Bareilly Nodal Center	269
4	Avanti Bai Nodal Center, Lucknow	1
5	Hardoi Referral Center	70
7	BalchikitshalayTudiyaganj, Lucknow	20
8	U.C.H.C., Indira Nagar	17
9	District Hospital Raebareilly	25



Vancomycin Susceptibility of Staphylococcus spp. by VITEK 2[®] COMPACT (BioMérieux); January-December 2019

		-				
Organism	Detectable I susceptible M	MIC range low MIC breakpoin	Susceptible (µg/ml)	Intermediate (µg/ml		
	<0.5		1			4
Staphylococcus aureus	2		5	0		4
Organism	Detectable MIC range lower than susceptible MIC breakpoint (µg/ml)			Susceptible (µg/ml)	Intern	nediate (µg/ml)
	<0.5	1	2	4	8	16
CoNS	3	6	-	-	-	3

Methicillin Resistance in Staphylococcus

Cefoxitin is tested as a surrogate for for oxacillin/methicillin for some species of Staphylococcus. Staphylococci isolates that are resistant by cefoxitin are said to be Oxacillin/Methicillin resistant. This isolate is intrinsically resistant to all betalactams and their derivatives.

• For agents with established clinical efficacy & considering site of infection and appropriate dosing, cefoxitin susceptible *Staphylococci* can be considered susceptible to:

1. beta lactam/beta lactamase inhibitor combination (amoxicillin-clavulanic acid, ampicillin-sulbactam, Piperacillin-Tazobactam, Ticarcillin-clavulanic acid);

2. Oral cephems (cefaclor, cefdinir, Cefpodoxime, Cefprozil, Cefuroxime, Loracarbef)

Vancomycin is the Drug of choice for treating Methicillin Resistant Staphylococcus Spp. Only MIC is the recommended method for testing Vancomycin in Stanhylococcus II and a testing vancomycin result for Stanhylo

recommended method for testing Vancomycin *in Staphylococci.* In order to get vancomycin result for *Staphylococcus*, kindly send request for VITEK-2 (automated MIC based Antimicrobial Susceptibility testing).

Micro organisms (Number)	Detectable MI Lower than su MIC breakpoin	C range usceptible nt	Susceptible	Resistant	Detectable MIC than resistant I breakpoint	Total Resistance	
	<u><</u> 0.5 µg/ml (% of Isolates)	1µg/ml (% of Isolates)	2µg/ml (% of Isolates)	≥ 4µg/ml (% of Isolates)	8µg/ml (% of Isolates)	≥ 16µg/ml (% of Isolates)	>2µg/ml (% of Isolates)
Escherichia coli (28)	93.0%					7.0 %	7%
Klebsiella pneumoniae (101)	70%	3.0%	2.0%	3%	4.0%	18.0%	25%
Acinetobacter baumannii (55)	87.0%					13.0%	13%
Pseudomonas aeruginosa (83)	81.0%		2.0%	1.0%		16.0%	17%
Pseudomonas Spp. (11)	9.0%					91.0%	91%

Colistin Susceptibility in Gram Negative isolates by VITEK 2® Compact BioMérieux; January to December 2019

Colistin testing in Gram negative bacteria

Only CLSI recommended method for testing susceptibility for Colistin is MIC calculation using broth micro dilution. Hence requisition for VITEK-2 (automated MIC based Antimicrobial Susceptibility testing) for Colistin should be sent.





Antifungal Susceptibility Testing : was carried out only when requeste	d
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Sample	Fungal Isolates	Total Number of Isolates	FLC	VRC	CAS	MYC	AB	FLU
Blood *Respiratory Samples	Candida utilis	5	4	5	3	1	5	5
	Candida tropicalis	4	3	4	3	2	4	4
	Kodamaea ohmeri	3	3	3	3	3	3	3
	Candida parapsilosis	1	1	1	1	1	1	1
	Candida pelliculosa	1	1	1	1	-	1	1
	Candida auris	1						
*Respiratory Samples	Candida Tropicalis	5	4	5	5	5	5	5
Campico	Candida Parapsilosis	4	3	4	4	4	4	4
*Respiratory Samples Urine	Candida albicans	3	2	1	3	3	3	3
	Candida guillermondii	1	1	VRC CAS MYC AB F 5 3 1 5 1 5 1<	1			
	Candida lusitaniae	1	1	1	1	1	1	1
Urine	Candida albicans	6	6	5	6	6	6	6
	Candida tropicalis	4	3	3	3	3	3	3
Candida tropicalis4Candida tropicalis4Kodamaea ohmeri3Candida parapsilosis1Candida pelliculosa1Candida auris1Candida Tropicalis5Candida Parapsilosis4Candida albicans3Candida lusitaniae1Candida lusitaniae1Candida albicans6Candida albicans6Candida lusitaniae1Candida lusitaniae1Candida albicans6Candida lusitaniae1Candida galbrata1Candida gualbrata1Candida auris1	1	-		0	0	0	1	
	Candida auris	1						
C								

*BAL, Bronchial aspirate, Endotracheal aspirate

Newer Candida spp. identified by MALDI-TOF

Use of MALDI-TOF has helped to identify newer Candida spp., these include : Candida utilis, Candida boidinii, Candida kefyr, Kodamaea ohmeri, Candida famata.

* Most important breakthrough was identification of Candida auris, which has emerged as the most notorious Candida species.









Department of Microbiology Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow

NEWSLETTER May 2020





- 1. Dr. Manodeep Sen with his team including Dr. Vikramjeet Singh were awarded first prize for the Best Innovative Idea in the workshop on Innovation in Medical Technology: "Converting ideas to Products". Their idea was "Use of silver nano particles and microventilator to create a better PPE for prevention of respiratory infections and air pollutants".
- 2. Dr. Pranshu was awarded the scholarship award in Junior Resident category & 2 times best performance in post test during HICC workshop at JIPMER, Puducherry



Second Annual Agar art competition held in Microbiology department for the First year Junior Residents First Position: Dr. Nikhil Raj- Robert Koch; Second Position: Dr. Shefali Gupta- Bird on a tree; Third Position: Dr. Priyanka Gupta- Liang Wudong (Wuhan doctor who died treating patients of Corona virus); Fourth Position: Dr. Kamaljeet Saluja-Flamingo under a tree; Fifth Position: Dr. Nitin Raj- Flower with petals

New test added in the Department of Microbiology

- Leptospira IgM ELISA (Rs 220/-)
- Automated ID and AST price reduced to Rs 550/-

Complete list of investigations carried out in our department, along with volume of sample & type of container is available at http://www.drrmlims.ac.in/hostipalservices.php.php in *click here* segment of Microbiology

Newsletter, Department of Microbiology, Dr. RMLIMS, Lucknow



Occult Hepatitis B - AN EVOLVING ICEBERG

Dr. Jaya Garg & Prof Jyotsna Agarwal

Occult hepatitis B virus infection (OBI) or silent Hepatitis B is a condition where infected individuals in spite of persistence of hepatitis B virus (HBV) genomes in their hepatocytes; are not picked up by routine screening test for hepatitis B since they test negative for the HBsAg (Hepatitis B surface Antigen).OBI is a clinical class of HBV infection, usually asymptomatic but very frequently associated with chronic liver disease and hepatocellular carcinoma.

The prevalence of OBI varies from 1% to 87% in different regions of the world. Studies from India have reported wide variation in prevalence of occult hepatitis B infection ranging from 0% to 50%. OBI has been reported amongst many high risk groups, including blood donors, liver transplant recipients, patients co-infected with hepatitis C virus/human immunodeficiency virus, patients undergoing immunosuppressive therapy, hemodialysis, patients with hepatic cirrhosis, cryptogenic liver disease, abnormal alanine transaminase patients with lymphoma or rheumatoid arthritis healthcare workers.

OBI is classified into seropositive OBI and seronegative OBI based on detection of serum HBV DNA, anti-HBc(core)Ab, anti-HBs(surface) Ab.In seropositive OBI, serum HBV DNA is detectable and both anti-HBc/anti HBs Ab are positive or at least anti-HBcAb is positive, while in seronegative OBI, only HBV DNA is detectable and both anti-HBcAb/anti-HBsAb are negative in serum. Though seropositive OBI accounts for the majority of OBI cases, nearly 20% of OBI cases are seronegative for all the HBV markers.

OBI can be seen in several clinical contexts:

(1) Recovery from past infection indicated by the presence of hepatitis B surface antibody (anti-HBs) (2) Chronic hepatitis with surface gene escape mutants that are not recognized by current assays (3) Chronic carriage without any marker of HBV infection other than HBVDNA ("seronegative" OBI) and(4) In endemic areas, where chronic carriers presents with HBsAg levels too low to be detected.

In the most developed countries, to boost blood safety, the nucleic acid amplification testing has been advocated for screening of blood donors for detection of HCV, HIV and HBV or OBI. It is recommended that to reduce OBI, the screening of HBV DNA be implemented among high risk groups by means of highly sensitive molecular assays. If highly sensitive HBV DNA testing is not feasible, the serological assay for anti-HBc antibody should be used as a possible surrogate marker for identifying potential seropositive OBI though nearly 20% seronegative OBI will still be missed.

In some studies, neonatal vaccination is given importance to prevent OBI, but again vaccination and the administration of HBIG and anti-viral drugs like lamivudine may exert evolutionary pressure to select escape mutants, which are the most important cause for OBI.

References

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•Hemert, Berkhout B, Lukashov V. Occult hepatitis B infection: an evolutionary scenario Virology Journal2008, 5:146

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"Best practises in Microbiology Automation" Training workshop for Microbiology technicians on Sept 14, 2019



BMW program held for 2019-Academic residents by Department of Microbiology on 20th Sept 2019

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Phialemonium species infection in a renal allograft recipient-first case report from north India Anupam Das¹, Sana Islahi ¹, Mohd Saquib ¹, Abhilash Chandra², Namrata Rao S ², Kiran Preet Malhotra³, Jyotsna Agarwal ¹ Department of Microbiology ¹, Department of Nephrology ², Department of Pathology ³, Dr. RMLIMS, Lucknow.

Introduction: Phialemonium species are grouped among the dematiaceous fungi. The genus is intermediate between Acremonium and Phialophora, being characterized by short cylindrical, lateral adelophialides arising from creeping vegetative hyphae, and by lacking conspicuous collarettes and periclinal wall thickenings. They appear to be an emerging cause of human disease, especially in the immunocompromised host.^[1] Majority of them are invasive as opposed to superficial & subcutaneous infection by the other dematiacious fungi.^[2-6] We present here the first documented case of invasive infection by *Phialemonium spp.* from India to the best of our knowledge.

Method (Case Report)

A 41-year-old male, who had undergone right renal transplant, was readmitted after one & half year gap with pain and swelling in the right iliac fossa for about a month and intermittent fever for 10 days of an unknown etiology. The patient was treated with antibiotics & antifungals with the suspicion of abscess in iliac fossa. We identified Phialemonium spp. in direct microscopy and culture of abscess drainage. The patient was on Voriconazole 200 mg IV BD for 2 weeks then switch over to Posaconazole 400 mg IV OD. Unfortunately he expired on the 5th day of partial nephrectomy due to focal graft nephritis.

KOH mount of direct sample showed brown pigmented conidia with septate hyphae (Fig 1a and 1b). On histopathology, melanized septate fungal hyphae was seen (Fig 2a and 2b). Fungal culture was done on Sabouraud Dextrose Agar and incubated small at 25°C & 37°C. After 5 to 7 days of incubation on PDA Obverse, Whitish to creamy cottony colonies turning greenish pale brown on the sides appears (Fig 3a) and on SDA, obverse showed whitish to creamy cottony colonies turning brown on the sides with brown patches (Fig 3b) and on reverse pale buff to brownish pigment was seen (Fig 3c).

Result

Lacto Phenol Cotton Blue mount after slide culture showed short adelophialides (phialides form singly along the hyphae, usually with no septum at the base to delimit it from the hyphae) and phialides (Fig 4a and 4b). The fungus was identified as *Phialemonium obvatum* on the basis of microscopic morphology.

Conclusion

Phialemonium spp., although a rare cause of fungal infections, are associated with a high mortality rate in immunocompromised patients.^[2-6] Clinicians should be alert about these fatal rare opportunistic fungal infections. Thus, the diagnosis and treatment of unusual fungal pathogens present a significant challenge to clinicians and microbiologists alike.







Fig 4a and 4b - LPCB mount to show short adelophialides and phialides (40X).



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Kodamaea: A New Addition To The Bloodstream Fungal Pathogens

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Background: Kodamaea ohmeri, previously known as Pichia ohmeri, belongs to the Ascomycetae class and the Saccharomycetaceae family. Pichia species are the teleomorph stage of Candida species. This yeast is commonly used in the food industry for its fermentation properties in pickles. Although a rare clinical isolate, it has been implicated in causing fungemia in a neonatal intensive care unit interstitial lung disease, endocarditis and enteritis.

Case report: We report a case of 2 day term neonate admitted in Neonatal Intensive Care Unit of Mother & Child State Referral Hospital ,DrRMLIMS Lucknow with severe respiratory distress. Baby was delivered by lower segment caesarean section to a primi mother at 37 weeks gestation with birth weight of 2200gm. Baby had signs of hypoxemia, hypovolemia & shock. Oxygen, IV fluids, ionotropes & antimicrobials were started. Blood investigations revealed a very high total leucocyte count of 30,000/microliter & thrombocytopenia. A blood sample was received in the Department of Microbiology for culture and sensitivity. Blood culture revealed yeast like organism. Microscopically small, 3-5 μ m budding yeast cells were seen and it was germ tube negative. After Inoculation on Sabouraud's Dextrose Agar and on incubating the agar for 24hours at 37 °C, small white colonies were observed on the HiCrome Candida Differential Agar plate which was incubated at 25 °C for 24 hours. Identification and antifungal susceptibility of the yeast isolate was carried out through biochemical profiles with Vitek 2 compact system (Biomerieux) and it was identified to be *Kodamaea ohmeri* which was sensitive to fluconazole (MIC, 8µg/mI), voriconazole (MIC, 1µg/mI), caspofungin (MIC, 0.5µg/mI) and micafungin (MIC, 0.5µg/mI). Antifungal treatment was started as per antifungal susceptibility report and as a result condition of baby improved in next few weeks, the baby was weaned of ionotropes & was discharged after 14 days of antifungal treatment.

Conclusion: *Kodamaea ohmeri* has been occasionally described as causing fungemias, catheter associated infections, phlebitis, wound infections, peritonitis, wound infections, peritonitis as well as outbreaks in intensive care units. Although reports on emerging fungal pathogens fail to include *K. ohmeri* as human pathogenic yeast, based on this case report it could be considered an uncommon pathogen for neonates. Isolation of an unusual pathogen from inpatients with risk factors should raise the alarm for a possible outbreak. Performing antifungal susceptibility testing is important, as different susceptibility profiles will have clinical implications in management of the patient.



White colony of K. ohmeri on SDA



Pinkish white colony of K ohmeri on HiCrome Candida Differential Agar

Reference

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Ocular manifestations in an otherwise healthy patient, do consider Cryptococcosis also- A case report

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Introduction: Cryptococcus neoformans can cause infections in immunocompromised patients only, is a long standing myth. It may be found in a substantial number of cases in immunocompetent hosts as well¹. Cryptoccocal meningoencephalitis is the most common manifestation of cryptococcosis, but signs and symptoms of cryptococcosis vary with immune status of patient¹. Disseminated Cryptococcus may involve multiple organs and common sites, including skin, lungs, eyes and CNS. According to a case report, around 16.2% Cryptococcosis cases occurred in other-wise healthy individuals². Cryptococcus neoformans is most classically linked with exposure to bird droppings, but the exact relationship between this exposure and disease is unclear. It is thought that Cryptococcus neoformans present in the environment (pigeon droppings) enters the host through inhalation. Poor immune status (immunocompromised) is in itself a very important risk factor for Cryptococcosis, but in case of immunocompetent hosts there is usually history of close contact with birds (especially pigeon droppings). According to a multicentre retrospective study on HIV negative CNS cryptococcosis had shown 30% patients had no apparent underlying risk factors. Here is one such case of cryptococcosis in an immunocompetent individual presenting with ocular manifestations along with headache.

Case : A 35 year old woman presented with chief complaints of severe progressive headache disturbing her daily routine and sleep, followed by non bilious projectile vomiting, high grade fever with chills and rigor since one month. Further she complained of blurred vision, diplopia & photophobia. She had no underlying risk factors. She had multiple pigeon nests in her house, and she used to regularly clean the droppings in the area adjacent to the nests, which could have been the possible source of infection.Her CSF sample was sent for microscopy, culture, biochemistry and cytology. Her MRI brain with contrast showed hyper intense regions on FLAIR/T2-weighted images. Encapsulated budding yeast cells were seen in India ink &on Gram staining. Cryptococcal Antigen Latex Agglutination System (CALAS) was positive with titre of 1:32. Culture was done on blood agar, chocolate agar and caffeic acid agar. Cultures came positive after about 72 hours of inoculation, showing creamy mucoid, low convex circular colonies. She was started on amphotericin B (0.7-1.0 mg/kg/day) and fluconazole (800 mg/dl). Repeat CSF sample was sent for microscopy and CALAS after a week of starting treatment. Encapsulated budding yeast cells were still seen in India ink & Gram staining & Cryptococcal latex agglutination (CALAS) was positive with titre of 1:8. She was clinically improving. Blurred vision, photophobia & diplopia were resolved. Same treatment was continued for another 2 weeks after which she was discharged. Again CSF was sent after 1 month of therapy when she was called for follow up. She was clinically asymptomatic, microscopy was negative for Cryptococcus, but CALAS remained positive with titre of 1:8.

Discussion: This was a case presenting with headache and ocular manifestations. Cryptococcal presentation in immunocompetent individuals is more indolent one, with satisfactory clinical outcomes as compared to immunocompromised patients³. Cryptococcus neoformans var. grubii & Cryptococcus gattii are causes of cryptococcal meningitis in immunocompetent patients⁴. These species are found in soil samples,decaying woods, or in bird droppings. Human may be infected by consuming contaminated vegetables, or inhalation of fungus (spores) in birds droppings, environment. These findings have been reported in other CNS cryptococcosis cases as well⁵. Few case reports have shown diplopia and blurred vision without overt signs of meningism to be the early presentations of Cryptococcal meningitis in an immunocompetent patient^{6, 7}. CALAS is a very rapid, sensitive test for detecting Cryptococcosis, while culture takes around 72 hours to come positive. Cryptococcal antigen titre falls as clinical condition improves, but even in a treated individual, it can remain detectable for several months after infection, even after fungus smears or cultures become negative⁸. Studies have suggested that a decrease in cryptococcal antigen titres can be used to monitor the antifungal therapy but cannot be used as an index of cure, as antigen may be released continuously from dead Cryptococcus neoformans cells9. Thus clinical suspicion of Cryptococcal meningitis should therefore be high even in case of immunocompetent hosts with no apparent risk factors or source of infection and no specific symptoms suggestive of meningitis.



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Automation in Bacteriology laboratory at Dr. RMLIMS

Dr. Akanksha Gupta, Dr. Anupam Das, Dr. Manodeep Sen, Prof. Jyotsna Agarwal Department of Microbiology¹, Department of Nephrology², Department of Pathology³, Dr. RMLIMS, Lucknow.

Automation is evolving as a new era in Microbiological Diagnostics. Here in Dr. RMLIMS our bacteriology laboratory is well equipped with number of automated devices, ranging from automated blood culture system (BacT/ALERT, VersaTREK), automated microbial identification (MALDI-TOF), to automated MIC based antimicrobial susceptibility testing (VITEK-2).

BacT/ALERT and **VersaTREK** are automated blood culture systems. BacT/ALERT is based on colorimetric detection of CO_2 produced by microorganisms. VersaTREK monitors headspace pressure changes due to gas consumed or produced by organisms during growth (any gas, not just CO_2). Special bottles containing various nutrients and anticoagulant factor are provided separately for aerobic, anaerobic bacteria, and yeast. The culture media provides an enriched environment for the pathogens in blood to grow manifold, whereby increasing the sensitivity and reducing the time to positivity. These are continuously monitoring blood culture systems which allow the incubation of blood culture bottles even at odd hours, as compared to manual cultures which are usually performed during fixed time by trained individuals. Moreover, the moment the pathogenic growth reaches above the threshold value, these machines give an alert alarm, which allows timely subculture of positive cultures. By reducing the time to positivity it also decreases reliance on empirical treatment, which in turn ensures definitive antibiotic treatment, hence maintains the antibiotic stewardship. Automated blood culture systems have shown to reduce mortality, ICU stay and antibiotic overuse (1, 2). Besides this, these systems also decrease bottle handling errors. Both of the above automated systems are not only FDA approved for blood but also for other sterile body fluids like CSF, Bile, etc. (3, 4)

MALDI-TOF stands for Matrix Assisted Laser Desorption Ionization Time of Flight. It is a proteomics based system used for accurate, rapid and inexpensive identification of microorganisms from various clinical isolates (5). Not just is the technique relatively simple to perform with rapid result, but it also helps in identifying many such microbes which could not have been identified using normal routine bio-chemicals. Identification of bacteria/fungi to species level is very important, not just for epidemiological purpose (or for looking for any outbreak); it also helps in use of correct antimicrobials depending on the intrinsic resistance profile of various bacterial/fungal species. The biggest breakthrough after the introduction of MALDI-TOF was identification of a very notorious fungus, *Candida auris*. Some of the other newer microorganisms which we have been able to identify using MALDI-TOF, which would not have been identified other-wise, are *Elizabethkingia meningoseptica, Stenotrophomonas maltophilia, Eikenella corrodens, Granulicatella adiacens, Scedosporium apiospermum, Kodaemaea ohmeri, Candida utilis, Candida pelliculosa, Candida boidinni etc.*

VITEK-2 is an automated system utilizing growth based technology. It consists of colorimetric reagent based cards each containing 64 test substrates. These test substrates measure various metabolic activities of the test organism. The optical system combines multichannel fluorimeter and photometer readings to record fluorescence, turbidity and colorimetric signals. Not only does it identify the microorganism, its main purpose is to perform antimicrobial susceptibility testing by analysing MIC of test organism using Advanced Expert System (AES). It follows CLSI guidelines for MICs and breakpoints. The system gets self updated when new CLSI guidelines are released each year. It can test large number of Gram positive bacteria, Gram negative bacteria, yeast and yeast like fungi and anaerobic bacteria. It can also help in detecting the type of resistance of the test microorganism, for example ESBL, MBL or mecA mediated oxacillin resistance in *Staphylococcus*. Besides for many antimicrobials CLSI recommends testing only by MIC method, and disc diffusion methods are not to be used, e.g. Colistin, vancomycin.

Automation has not only reduced the turnaround time of tests, it has also helped us provide precise results to the clinicians, thus helping in diagnostic stewardship





Automated Systems in Microbiology Department- 1. BacT/Alert system, 2. VersaTREK machine, 3. VITEK-2 machine, 4. MALDI-TOF



Departmental Projects, Publications & Awards in last one year

Ongoing Research Projects

1. Project Title: An assessment of changing pattern of seroepidemiology of Hepatitis A virus infection in endemic setting Funded by: Dr. RMLIMS for 2 years from June 2018 Principal Investigator: Prof. Jyotsna Agarwal 2. Project Title: Evaluation of effect of radiation on oropharyngeal flora in patients with oropharyngeal cancer and its correlation with salivary metabolites : A Pilot Study Funded by: Dr. RMLIMS for 2 years from Feb 2019 Principal Investigator: Dr Manodeep Sen (Professor Junior Grade) 3. Project Title: Study on frequency of Dermatophyte species in superficial mycotic infections and Nuclear Magnetic Resonance based identification of metabolites in Dermatophytes - at a tertiary care level super specialty institute in northern India Funded by: Dr. RMLIMS for 2 years from April 2017 Principal Investigator: Dr Anupam Das (Professor Junior Grade) Project Title: HCV core Antigen: An evolving marker for evaluating treatment response in patients with Hepatitis C infection Funded by : Dr RMLIMS for 2 years from October 2019 Principal Investigator: Dr Jaya Garg(Associate Professor) **Extramural Project** 1. Project Title: Evaluation of TB LAMP (Loop Mediated Isothermal Amplification) assay for diagnosis of Central Nervous System Tuberculosis (CNS TB) Approved by: CST UP

Principal Investigator: Dr Vineeta Mittal (Professor Junior Grade)

Publications from the Department of Microbiology

- 1. Jameel F, Agarwal J, Waseem M, Serajuddin M. Epidermal Mucus Extracts of three Freshwater Air-Breathing Fish Species against Gram Positive and Gram Negative Human Pathogenic Bacteria. Indian Journal of Fisheries. 2019;66(1):119-123.
- 2. Singh V, Sen M, Das A, Srivastav S, Mittal V. A Survey of Staphylococcus Isolates amongst Commonly used Fomites of Hospital Personnel with Special Reference to Methicillin Resistance. Indian Journal of Health Sciences and Care. 2019;6(1):1-5
- 3. Yadav P, Sen M, Das A, Srivastava J K, Singh AK, Maurya PK, Chaturvedi P, Malhotra HS, Agrawal GR and Chaterji T. Clinical Pattern and Antifungal Susceptibility of Cryptococcus Neoformans from Cryptococcal Meningitis Patients in Northern India. International Journal of Current Advanced Research. 2019;8(08):19581-19588.
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- 12. Agarwal J, Radera S. Biofilm mediated Urinary Tract Infections in Kumar S. et. al (Eds). Biofilms in Human Diseases: Treatment and control Springer Nature Switzerland. 2019:177-213.
- 13. Reddy H, Chauhan S, Agarwal J. Pharmacokinetic and pharmacodynamics of antibiotics in Medicine Update 2019, Chapter 275C. Jaypee Brothers Medical Publishers, 2019.

Awards/Recognition

- Dr Vineeta Mittal was awarded "Chikitsa sewabhushan samman-2019" by National Medical Organization Lucknow in July 2019.
- Dr Manodeep Sen was awarded First Prize for Presentation on "Use of Nanoparticles and Microventilators for better PPE for prevention of respiratory infections and air pollutants" at Workshop on Innovation in Medical Technology:Converting Ideas to Products by Society for Innovation in Medical Sciences on 25th May 2019.



CME on 'Beyond Antibiotics' (held on 02/03/2018) 6TH issue of Microbiology Newsletter was released. Prof Pallab Ray was the keynote speaker



Celebrating World Hand Hygiene day on 5th May 2019. Pic 1: Prize for slogan writing competition. Pic 2: Director Sir addressing the participants. Pic 3: Rangoli being made by MBBS students. Pic 4: Release of Hand hygiene policy. Pic 5: Rangoli designs being judged by respected judges.



Live telecast of Webinar on World Sepsis Day 13th September 2019



Inauguration of MALDI-TOF by Minister of Medical Education Department Shri. Suresh Kumar Khanna ji, 27th Sep 2019



"Sample collection for Microbiology investigations" module conducted by Department of Microbiology for new Academic residents of institute under Resident Development Program, 11th Januray 2020



Winning entry By Dr. Pranshu Pandey (JR-II) in Hospital InfectionSociety India, Aligarh Chapter Photography Competition, as part of Antibiotic Awareness Week (18th to 22nd Nov 2019)

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VISITOR



Prof. Pallab Ray interacting with Microbiology MD students in Microbiology Seminar room on 2nd March 2019



Welcoming MBBS Batch 2018



ICN's taking health education sessions for nursing & other staff



Interactive learning session arranged by Department of Microbiology for MBBS Batch 2017 as Seminar Presentation



Interactive learning session arranged by Department of Microbiology for MBBS Batch 2017 as Quiz competition 21st August 2019.



PG Orientation program held for new MD joinees (Microbiology) on 23rd May 2019



Panel discussion on Covid-19, March 2020

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Department of Microbiology Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow

NEWSLETTER May 2020





Holi 2019



Teacher's Day celebration 2019



Departmental birthday celebrations



New Year 2020



Department of Microbiology : Faculty, Residents and Staff

Congratulations Department of Microbiology wishes happy married life to Dr. Vaishali Jyoti (married to Dr. Ankur Verma)

This News Letter is for private circulation only

Newsletter, Department of Microbiology, Dr. RMLIMS, Lucknow





Lab Attendants: Mr. Pravesh, Mr. Avdhesh & Mr. Pradeep



Getting ready: Donning



Data Entry Team Leader Mr. Neeraj with Mr. Rajesh & Mr. Kunwar Pal



Dr. Saquib (SR) & Infection control Nurses, part of Infection Control Team at Covid19 Hospital



Our Army of Residents: Dr. Vikramjeet, Dr. Tushar, Dr. Sana, Dr. Pranshu Dr. Ashish, Dr. Nitin,,, Dr. Kamaljeet Dr. Shefali & Dr. Vaishali



Director Prof. A K Tripathi, at Covid-19 Lab interacting with the team



Reporting Clerk Mr. Rahul

