Thirty five years scenario of cryptococcal meningitis: An analysis in pre and post HIV era

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Background: Cryptococcal meningitis remains one of the leading causes of morbidity and mortality among immunosuppressed individuals, particularly those with HIV infection. Globally, approximately one million cases occur each year resulting in more than six lakh deaths.

Although incidence of cryptococcal meningocencephalitis has declined in patients who have access to anti retroviral therapy, it still remains a prominent cause of morbidity and mortality in developing world where access to ART is limited.

We have analysed the cases of cryptococcal meningitis over a period of thirty five years in pre and post HIV era.

Methods & Materials: This retrospective and prospective study was done in the department of neuromicrobiology, NIMHANS, a tertiary neurocentre of South India, from January 1979 to December 2014. Diagnosis was based on india ink preparation, antigen detection, and culture by standard laboratory methods. Serotype, mating type and genotype were determined by molecular methods in few of the isolates.

Results: In 1988, first case of HIV associated cryptococcal meningitis was diagnosed in NIMHANS. During 1996 to 2003, HIV positivity in cryptococcal meningitis was 94-96%. The incidence of cryptococcal meningitis among HIV negative patients has been on the rise reaching upto 17.25% in 2014.

A total of 1230 cases of cryptococcal meningitis were analysed, of which ten were from the pre HIV era (1986). The age group ranged from 2-76 years, and the disease was most prevalent in the 30-40 age group. Onset of the clinical symptoms ranged from 4 days to 6 months. Headache was the commonest symptom followed by high or intermittent fever and vomiting. Patients also had neck stiffness (90%), altered sensorium (65%), behavioural changes (50%), blurring of vision (30%) etc.

CSF cell count ranged from 0-400 cell/cumm with predominantly lymphocytes. India ink was positive among 90% and fungal culture was positive in all the cases.

Among C. neoformans, 4-11% belonged to biovar. gattii. Of the isolates tested, serotype ‘A’ was predominant and all were of mating type alpha. 97.5% isolates were sensitive to amphotericin B and 90.2% to fluconazole.

Conclusion: A high index of suspicion is needed for early diagnosis as many would recover with timely and adequate antifungal therapy.

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to develop vaccine production. The present study was therefore undertaken to determine the prevalence of cryptococcal meningitis in this region, to evaluate the different diagnostic techniques available and to study the prevalence of the genotypes of *C. neoformans* in this region.

**Methods & Materials:** Cerebrospinal fluid was collected from 150 patients with clinically suspected cryptococcal meningitis from Apr 2010 to 2012. All samples were subjected to microscopy, antigen detection, culture and PCR. Twenty-six of the isolates obtained by culture were further subjected to MLST genotyping method on ABI 3130 Genetic analyzer.

**Results:** Of the 150 suspected patients 47 were positive by culture. 43.43% of the isolates were from HIV+ve patients. Comparing the Latex agglutination and PCR techniques using culture as the gold standard, they gave a sensitivity of 91.49% and 100% respectively and a specificity of 92.92% and 87.38%. Latex agglutination and PCR detected an additional seven patients 13 patients respectively which were not detected by culture. The predominant molecular type was VNI (96.15%). Only one isolate was of VNII. The phylogenetic analysis showed three major clusters.

**Conclusion:** Cryptococcal meningitis a critical illness in patients on antiretroviral therapy. There could be a role of developing vaccines directed against VNI genotype of *C. neoformans* for the management of patients with HIV infection.

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**Antifungal prophylaxis with posaconazole suspension versus tablet in pediatric patients after hematopoietic stem cell transplantation**

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**Background:** Pediatric patients after hematopoietic stem cell transplantation (HSCT) have a high risk of invasive fungal infection. Due to the excellent results from prospective studies in adults, we have been using posaconazole for antifungal prophylaxis in pediatric patients for several years now. In addition to posaconazole oral suspension, posaconazole has recently been formulated as a tablet. In this analysis safety, feasibility, initial data on efficacy and posaconazole serum concentrations of posaconazole suspension were compared to posaconazole tablet in pediatric patients after HSCT.

**Methods & Materials:** 52 pediatric patients with hematological malignancies with a median age of 11 years (range 6 months – 21 years) that received posaconazole as antifungal prophylaxis after allogeneic HSCT were analyzed. Of the 52 patients, 31 received posaconazole suspension and 21 received posaconazole tablet up to a maximum of 200 days after HSCT. Posaconazole trough levels were analyzed on days 2, 3, 5, 7, 10, 14 and four weeks after start with posaconazole.

**Results:** No possible, probable or proven invasive fungal infection occurred in both groups. On every analyzed time point after start of antifungal prophylaxis the trough levels were significantly higher in the tablet group compared to the suspension group. For example: day 3 suspension group (median 133 ng/ml, mean 156 ± 81 ng/ml, range 45-312 ng/ml) vs. tablet group (median 516 ng/ml, mean 656 ± 385 ng/ml, range 224 - 1383 ng/ml) P < 0.0001; day 7 suspension group (median 252 ng/ml, mean 390 ± 459 ng/ml, range 54 - 2441 ng/ml) vs. tablet group (median 710 ng/ml, mean 910 ± 528 ng/ml, range 329-2227 ng/ml) P < 0.0001; 14 suspension group (median 529 ng/ml, mean 643 ± 493 ng/ml, range 115-2081 ng/ml) vs. tablet group (median 834 ng/ml, mean 1076 ± 628 ng/ml, range 404-3060 ng/ml) P = 0.0031; 4 weeks suspension group (median 634 ng/ml, mean 732 ± 408 ng/ml, range 290-1664 ng/ml) vs. tablet group (median 1367 ng/ml, mean 1720 ± 973 ng/ml, range 582-4066 ng/ml) P = 0.0001.

**Conclusion:** Posaconazole suspension and tablet are comparably effective in preventing invasive fungal infections in pediatric patients after HSCT. Trough concentrations in the tablet group were significantly higher than in the suspension group at all analyzed points in time.

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**Randomized Clinical Trial on Evaluation of The Effect of Bergamot oil on Treatment of Ring Worm Infection in Calves and Cats**

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**Background:** Dermatophytes are one of the important fungal diseases affecting wide range of animal species including cattle, buffaloes, sheep, goats, dogs and cats. It has a severe zoonotic impact as it induce several affections in human beings. The disease is highly contagious and present all over the world.

The dermatophytes include three genera, Trichophyton, Microsporum, and Epidermophyton. Dermatophytes are grouped according to their habitat as being either anthropophilic, zoophilic or geophilic as mentioned by Achterman and White 2012.

The objectives of our study are to evaluate the efficacy of local application of different concentrations of bergamot oil on the recovery of clinical cases under the field conditions.

**Methods & Materials:** The study was carried out on 20 calves and 20 cats suffered from clinical signs of dermatophytosis. These animals were exposed to visual examination and skin scraping of the lesions accompanied with fungal culture using Fungassay technique for detection of causative fungi. Diseased calves and cats were divided into 4 groups (5 animals / each group). Three groups were treated locally using Bergamot oil as ointment with different concentrations of bergamot oil while the fourth group was used as control.