

**INFECTIOUS FEVER-CROSS SECTIONAL STUDY OF 500 PATIENTS****DR.V.PADMA\*<sup>1</sup> AND DR.SYED MOHAMMED JAVID M.S.A.<sup>2</sup>**<sup>1</sup>*Professor of Medicine, SreeBalaji Medical College, Bharath University, Chrompet, Chennai, India.*<sup>2</sup>*Post graduate, SreeBalaji Medical College, Bharath University, Chrompet, Chennai, India.***ABSTRACT**

Infections are one of the leading causes of morbidity and mortality in our country. This study was undertaken to evaluate the changing profile in patients presenting with infectious fevers. To study the clinical profile like age, sex, fever duration and associated systemic symptoms in patients with infectious fever. To study the most common cause of infectious fever. To study the various organ dysfunction and the causes of organ dysfunction in patients with infectious fever. 500 patients with fever were analysed, 54% were males and 46 %were females. The common causes of infectious fever were dengue fever(22%), malaria (24%), leptospirosis (22%), enteric fever (12%) , urinary tract infection(8%), chikungunya, (6%)tuberculosis,(3%)pneumonia (2%), and pyrexia of unknown origin(1%).Common complications of malaria were cerebral malaria (2%),jaundice (10.%) and renal failure (1%).Anicteric hepatitis (81%) was the most common presentation of leptospirosis and renal failure occurred in 2% of the cases .Among patients with dengue fever 1% had dengue encephalopathy,1% had post dengue psychosis and 3%had pancreatitis. Malaria, leptospirosis, dengue fever and enteric fever were the common causes of infectious fevers in this study. Early diagnosis and treatment has reduced morbidity and mortality in fever patients.

**KEY WORDS:** fever, leptospirosis, malaria, enteric fever.**DR.V.PADMA**Professor of Medicine, SreeBalaji Medical College,  
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## INTRODUCTION

Infections are one of the leading causes of morbidity and mortality in our country. Fever is an elevation of the body temperature that exceeds the normal daily variation and occurs in conjunction with an increase in hypothalamic set point, which controls the normal body temperature. Studies in different areas have a different clinical profile. This study was undertaken to evaluate the changing profile in patients presenting with infectious fevers

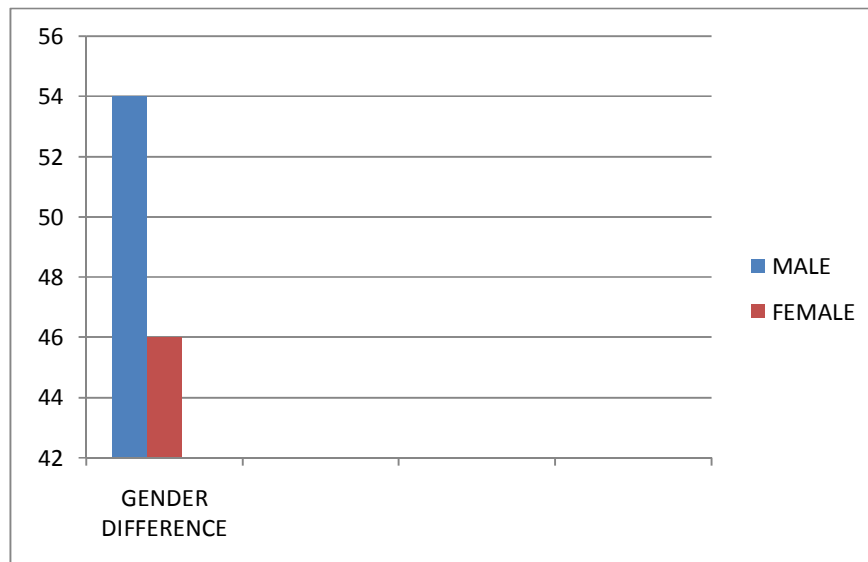
## AIM OF THE STUDY

To study the clinical profile of patients with infectious fever in the medical wards of a tertiary care centre.

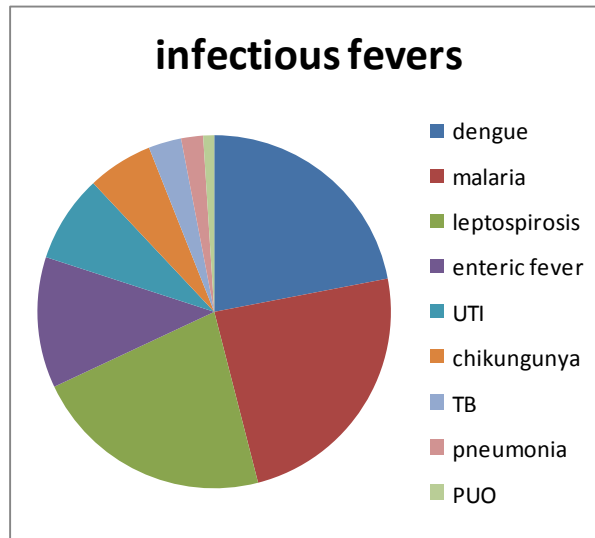
1. To study the clinical profile like age, sex, fever duration and associated systemic symptoms in patients with infectious fever.
2. To study the most common cause of infectious fever.
3. To study the various organ dysfunction and the causes for organ dysfunction in patients with infectious fever.
4. To analyse the causes of mortality in patients with infectious fever.

## MATERIALS AND METHODS

500 patients attending medical outpatient department were enrolled into this study. Patients with non-infectious cause of fever were excluded from the study.

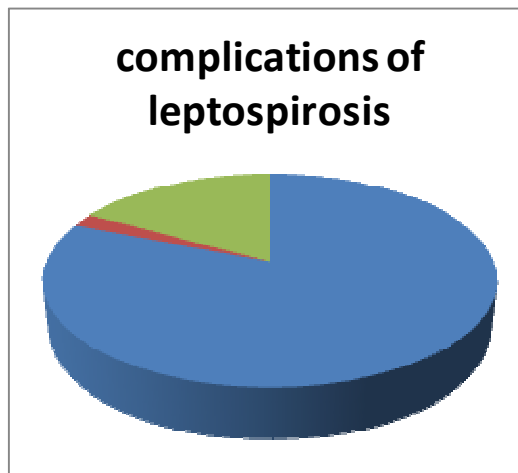


**Figure 1**  
*Of the patients enrolled, 54% were males and 46 %were females.*



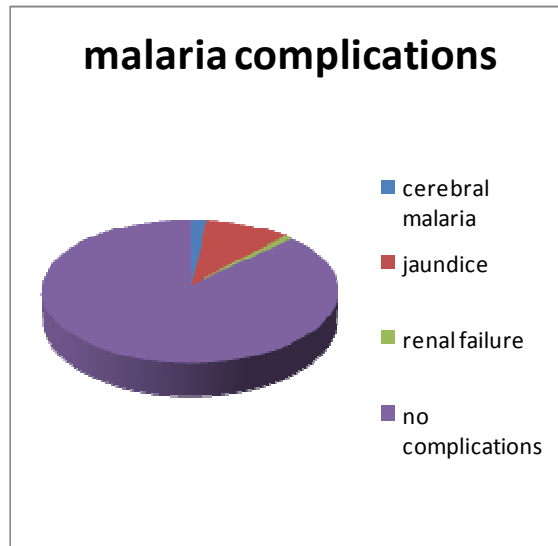
**Figure 2**

*The common causes of infectious fever were dengue fever (22%), malaria (24%), leptospirosis (22%), enteric fever (12%), urinary tract infection(8%),chikungunya, (6%) tuberculosis, (3%) pneumonia (2%), and pyrexiaof unknown origin(1%)*

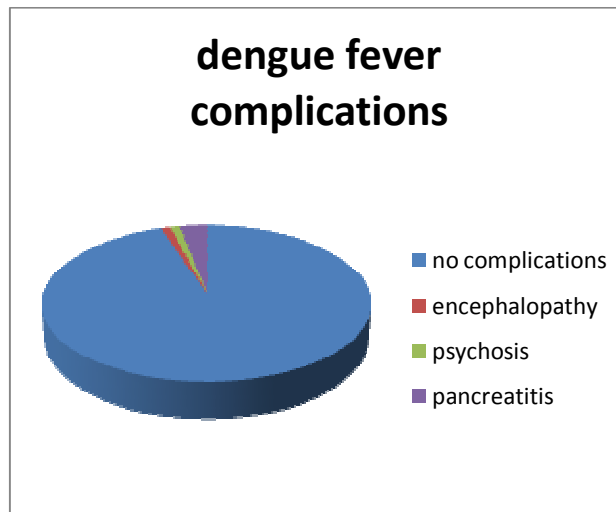


**Figure 3**

*Among patients with leptospirosis, anicteric hepatitis (81%) was the most common presentation and renal failure occurred in 2% of the cases.*



**Figure 4**  
*Common complications of malaria were cerebral malaria (2%) jaundice (10%) and renal failure (1%).*



**Figure 5**  
*Among patients with dengue fever 1% had dengue encephalopathy, 1% had post dengue psychosis and 3% had pancreatitis.*

## DISCUSSION

Infections are one of the leading causes of morbidity and mortality in our country. Fever is an elevation of the body temperature that exceeds the normal daily variation and occurs in conjunction with an increase in hypothalamic set point, which controls the normal body temperature. Studies from different areas show different infective profile. Kejariwal<sup>1</sup> in 2001 at Calcutta studied the etiological profile of 100 cases of FUO, the

pattern was infections (53%) followed by neoplasm (17%), collagen vascular diseases (11%), miscellaneous (5%) and undiagnosed (14%). De Kleijn<sup>2</sup> in a study of 167 immuno competent patients with FUO found 43 (25.7%) had infections, 21 (12.6%) had neoplasms and 40 (24.0%) had inflammatory diseases. Petersdorf<sup>3</sup> in 1952 - 57, studied 100 cases, of which majority (36%) were due to infections like, tuberculosis, abdominal

abscess, endocarditis, brucellosis and urinary tract infections. 26% were due to lymphomas, leukemias and solid tumors. 15% were due to connective tissue diseases. Larson<sup>4</sup> studied 105 cases of FUO patients of which infections formed 30%. Malignancies formed 37% and 14.3% were due to connective tissue disorders. Others were undiagnosed. Knockaert<sup>5</sup> studied 199 cases of FUO patients of which infections formed 22.5%, followed by collagen vascular disorders (21.5%). Neoplasms formed 7% while others were miscellaneous and undiagnosed. Sharma<sup>6</sup> studied 150 cases of FUO of which, infections formed 50%, followed by Neoplasms which formed 22%. 8% were due to collagen vascular diseases, 15% formed miscellaneous causes and 5% were undiagnosed. Burke<sup>7</sup> reviewed various studies on FUO and noted that common treatable causes were tuberculosis, subacute bacterial endocarditis, abscesses, salmonella and leptospirosis. Shivakumar<sup>8</sup> reported the study on the etiology profile of fever, a study carried out in Chennai during 2002 - 2003. Out of 195 diagnosed cases tuberculosis formed 40% of cases, pneumonia 15.4%, meningitis and malaria forming 12.8% each and leptospirosis forming 8.2%. The proportion of undiagnosed cases was 46%. Ruth D. Ellis<sup>9</sup> studied to find out the etiological profile of fever in the Thailand, which was carried out from 1999 to 2002. Etiologic diagnosis was made in 48% cases. Malaria was the most common diagnosis accounting for 25%, followed by leptospirosis, comprising about 17%. Other etiologic diagnoses were intestinal infections, dengue fever and typhoid. Bansode<sup>10</sup> conducted a prospective study of malaria at Bombay during June 1993 to May 1994. All patients had fever, followed by head ache (92%), vomiting (74%), cough (7%), diarrhoea (4.6%), icterus (3.8%) and oliguria (1%) 70% were due to Plasmodium vivax and 30% due to P.falciparum. Madhu Muddaiah<sup>11</sup> in mangalore in 2002 - 2004 studied the profile of 190 admitted patients with smear positive malaria. Plasmodium vivax- 90, Plasmodium falciparum-71, mixed infections - 29. Jaundice occurred in 5 cases of vivax, 20 cases of falciparum and 3 cases of mixed infections. Over all 28 (14.73%) had jaundice. Splenomegaly was seen in 30 (15.7%), hepatosplenomegaly in 26 (13.6%),

hepatomegaly in 8 (4.2%) and raised serum creatinine in 14 (11.57%) cases. Mohapatra<sup>12</sup> from Berhampur has reported various atypical presentation of malaria in their study of 110 cases of vivax malaria. They were absence of malarial paroxysm (22.8%), migrainous head ache (4.5%), myalgia (6.3%), episodic utricularial rash (1.8%), relative bradycardia (13.6%) and postural hypotension (2.7%). Studies on dengue fever revealed that the most common clinical feature of dengue fever was fever (100%) followed by headache (62.16%). Atypical features like raised transaminases and different neurological manifestations were present in 83.83% and 11.11% cases<sup>13</sup>. The spectrum of severe falciparum malaria has changed worldwide. Currently a large proportion of cerebral malaria patients present with multiple complications including acute renal failure and jaundice<sup>14</sup>. Mohapatra<sup>12</sup> in 2006 from Orissa observed that jaundice is an important solitary complication. There were multiple complications and majority had constellation of 3 complications. Cerebral malaria, jaundice and renal failure (75.3%) were the most common combination. The mortality rate was 14.6%, 21.3%, 30.9%, 38.5%, 100% and 100%, among patients with 1, 2, 3, 4, 5 and 6 combinations respectively. M.A. Muthusethupathi and S.Shivakumar<sup>15</sup> studied the epidemiological and clinical profile of leptospirosis patients admitted in Government General Hospital, Chennai - 3, (1987 - 1995). Out of 206 patients most of them presented during the monsoon months. The important clinical features noted were: Fever - 100%, Jaundice - 83%, Renal failure - 79% Myalgia - 79%, Conjunctival Suffusion - 43%, CNS - 43%, Bleeding tendencies - 28% Autumnalis was the most common serogroup noted then. Overall icteric leptospirosis constituted the common group with 83% and mortality was 15.5%. In 2006, Shivakumar S<sup>15</sup> reported that severe leptospirosis has declined, mild leptospirosis has increased. He reports that in a recent study of 106 cases of leptospirosis from North Chennai, jaundice occurred in 17.8% and renal failure occurred in 10.3% showing a decline in complication. Fever, head ache and myalgia were the common presentation. Only 2 patients were dialysed and there were no deaths. Contaminated environment (98%) and rainfall (50%) were

the important epidemiological risk factors. Studies on leptospirosis later have shown<sup>16</sup>that among 100 cases of leptospirosis. 43 had leptospira copenhageni, 27 had I. louisiana, 18 had I. valbuzzi, 9 had I. bratislava, 2 had I. icterohemorrhagica and 1 had I. bataviae. Only 2 patients with leptospira icterohemorrhagica had complications and one patient died. There was a decline in death to 7.5% in 1995-2004 to 1% in 2014. Samal<sup>17</sup> analysed clinical features of 110 sputum positive pulmonary tuberculosis patients between 1987 - 1989. Majority had haemoptysis (60.7%), cough (47.06%) and fever (44.7%). Other symptoms were hoarseness of voice and loss of weight. 18% had clubbing and 3.5% had lymphadenopathy. Radiologically 98% had fibro caseous lesions, cavity in 60% and bilateral opacities in 59%. Bansal .S<sup>18</sup> studied the clinical and bacteriological profile of community acquired pneumonia in a tertiary care hospital at Himachal Pradesh. 70 patients were studied. Patients older than 40 years were predisposed. Etiological diagnosis was obtained in 53(75%) cases. Among that 19 cases of Streptococcus pneumoniae, 12 cases of Klebsiella pneumoniae, 9 cases of Staphylococcus aureus, 8 cases of Mycoplasma pneumonia and 6 cases of Escherichia coli were grown in culture. Among the diagnosed cases number of malaria cases diagnosed in present study was 24% while it was 12.8% in the previous study. The increased incidence of malaria is due to use of peripheral smear and<sup>19</sup> quantitative buffy coat method which was carried out at malaria laboratory. Leptospirosis is diagnosed more often in the present study (18%) than the previous study (8.2%) due to awareness of the disease and picking up of anicteric leptospirosis and increased diagnostic facilities for doing slide agglutination test. Chikungunya fever which was not present in

the previous study was picked up in the present study due to the wide spread epidemic which occurred from July 2006 - December 2006. The incidences of other causes of fever are more or less the same. A similar study on etiological profile of fever was carried out in Thailand between 1999 - 2002, the results of which are similar to our study. Malaria constituted 25% of diagnosed cases in their study, whereas in our study it was 24%; leptospirosis was about 17%, in our study it constituted 18% of cases<sup>9</sup>.

## CONCLUSION

500 patients with fever were analysed, 54% were males and 46 % were females. The common causes of infectious fever were dengue fever (22%), malaria (24%), leptospirosis (22%), enteric fever (12%) , urinary tract infection (8%), chikungunya, (6%) tuberculosis, (3%) pneumonia (2%), and pyrexia of unknown origin (1%). Common complications of malaria were cerebral malaria (2%), jaundice (10.%) and renal failure (1%). Anicteric hepatitis (81%) was the most common presentation of leptospirosis and renal failure occurred in 2% of the cases. Among patients with dengue fever 1% had dengue encephalopathy, 1% had post dengue psychosis and 3% had pancreatitis. Malaria, leptospirosis, viral fever and enteric fever were the common causes of infectious fevers in this study. Early diagnosis and treatment has reduced morbidity and mortality in fever patients. Comparing this study with the previous studies, there is increase in incidence of malaria and leptospirosis with lower incidence of complications, decreased number of cases of tuberculosis, probably due to increased diagnostic facilities and early treatment.

## REFERENCES

1. Kejariwal D. Sarkar N, Chakraborti SK. Pyrexia of unknown origin: a prospective study of 100 cases, Journal of Postgraduate medicine, 47: 104 - 107, (2001).
2. De Kleijn, F.U.O - A prospective multicenter study of 167 patients with F.U.O, using fixed epidemiologic entry criteria. Medicine, 76: 392 - 400, (1997).
3. Peters Dorf, F.U.O: An old friend revisited. Arch. Int. Med., 152-21, (1992).
4. Larson et al. Diagnosis and followup of 105 F.U.O cases, Medicine, 61:269, (1982).

5. Knockaert, Fever of unknown origin in 1980. Arch Int. Med., 152: 51, (1992).
6. Sharma B.K, Kumar. Prolonged and undiagnosed fevers in north India. Tropical and geographic medicine, 14: 22 – 6, (1992).
7. Burke et al. fever of unknown origin. Inf. Dis. Clin., 10:111- 125, (nov 1996).
8. Shivakumar S, Emmanuel Bhaskar M, Jayachandran R, Sukumar C, Clinical profile of infectious fevers (non - HIV). A prospective study of 361 cases. J. Assoc. Phys. India, 51:1257, (dec 2003).
9. Ruth. D. Ellis, Fukuda M, McDaniel. Causes of fever in adults' on the Thai - Myanmar border. Am. J. Trop. Med. Hyg, 74(1):108- 113, (2006).
10. Ban sode et al. Clinical profile of malaria at Dr. B.A.M. Hospital .J Assoc Phys India, 42(12): 1052, (1994).
11. Madhu Muddaiah and P.S. Prakash. A study of clinical profile of malaria in a tertiary referral centre in South Canara. J. Vect. Borne Dis., 29-33,(mar 2006).
12. Mohapatra MK, Padhiary KN, Mishra DP. Atypical Manifestations of Plasmodium Vivax Malaria. Indian J. Malariol, 391 (1-2): 18- 25, (2002).
13. Sanjay Kumar Mandal, Jacky Ganguly, Koelina Sil, Sumanta Chatterjee, Kaushik Chatterjee, Pankaj Sarkar, Shatanik Hazra, Debasis Sardar. Clinical Profiles of Dengue Fever in a Teaching Hospital of Eastern India. .Natl J Med Res. 3(2): 173-176, (2013).
14. D.K. Kochar S. K. Kochar. Malaria in India; 62nd Annual Conference of Association of Physicians of India. Medicine update. 17: 645, (2007).
15. Shivakumar S... Leptospirosis in Chennai - Changing Clinical Profile. J Assoc Phys. India., 54: 964 – 965, (dec 2006).
16. V.Padma, Syed Mohammed Javid. Leptospirosis-A Cross Sectional Study .World Applied Sciences Journal, 29 (7): 879-883, (2014).
17. Samal et al. Pattern of Pulm. Tuberculosis in Adults in Western Orissa. J. Assoc. Phys. India, 38(1): 14, (1990).
18. S. Bansal, S. Kashyap, LS Pal and A. Goel. Clinical & Bacteriological profile of community acquired pneumonia in Shimla, Himachal Pradesh. Indian J. Chest Dis. Allied Sciences, 46: 11 – 22, (2004).
19. Hazra, Chowdhury RS, Sala S.K. Changing Scenario of Malaria: A study at Calcutta. Indian J. Malariol, 35(2): 111 – 6, (1998).