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Earthquake related infections in Nepal

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Background: A 7.6 magnitude earthquake on April 25, 2015 in Nepal followed by a series of aftershocks claimed almost 9,000 lives and caused injuries among 23,000 people. Tribhuvan University Teaching Hospital (TUTH), a tertiary care center, was one of the major hospitals in Kathmandu providing care to the earthquake victims. This study was conducted to identify etiological agents of various infections among earthquake victims admitted to TUTH.

Methods & Materials: A total of 357 samples were received from earthquake victims in the Microbiology laboratory of TUTH from 25 April to 1 July, 2015. The samples included pus/swab (n=130), blood (n=81), urine (n=77), sputum (n=47) and body fluids (n=22). These samples were received from emergency department and inpatient wards including intensive care units. Standard methodology were followed to identify the microorganisms and susceptibilities were done using disk diffusion method.

Results: Microbial growth was seen in 67.7% of pus, 18.2% of body fluid and 13.6% of blood samples. Similarly, significant growth was found in 48.9% of sputum and 28.6% of urine samples. Mixed growth of microorganisms was seen in 20.8% of pus, of which combined growth of *Staphylococcus aureus* and *Escherichia coli* was most common (n=3). *Escherichia coli* was the most common isolate from pus (n=26), followed by *Staphylococcus aureus* (n=18) and *Acinetobacter calcoaceticus baumannii* (*Acb*) complex (n=17). *Escherichia coli* (n=11) was the predominant isolate from urine samples. In sputum samples, *Klebsiella pneumoniae* (n=7) was most common followed by *Escherichia coli* (n=4) and *Pseudomonas aeruginosa* (n=4). In blood cultures, *Citrobacter freundii* (n=3) and *Burkholderia cepacia* complex (n=3) were the common isolates. *Escherichia coli*, *Klebsiella pneumoniae* and *Acb* complex were isolated from different body fluid samples. Out of total 140 gram-negative bacterial isolates, 56.4% (n=79) were carbapenem resistant. Similarly, methicillin resistance was seen in 23.8% (n=5) of total 21 *Staphylococcus aureus* isolates.

Conclusion: Based on the specimens received by Microbiology laboratory, pus followed by blood and urine were the most common samples received and wound related infections were the most common type of infection among the earthquake victims. A variety of bacteria was isolated from these samples including a significant number of carbapenem-resistant gram negative bacilli.

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Assessment of fourteen days primaquine treatment efficacy in plasmodium vivax malaria at primary and tertiary care centers in Southwestern India

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Background: Acquaintance is scanty on PQ efficacy and *P. vivax* relapse in Udupi district, Karnataka, India. We assessed the efficacy of 14 days PQ treatment for preventing recurrence of *P. vivax* infection.

Methods & Materials: Microscopy and PCR proven *P. vivax* infected adults (≥18 years) from one tertiary and five primary health centres, pre-enrolled in a chloroquine-primaquine (CQ-PQ) combined therapeutic trial, upon convalescence on 28th day were requested to participate in another 15 months long follow up study. Participants were treated previously with CQ 25 mg/kg body weight over 3 days and PQ 0.25 mg/kg body weight daily for 2 weeks upon confirmation of G6PD levels. A complete adherence for the prescribed CQ-PQ regimens was noted. A peripheral blood smear examination was performed with every participant within 1–2 months duration. A positive *P. vivax* case was considered as relapse/reinfection and retreated with CQ-PQ. Data were analysed by independent t-test or Mann Whitney U test, χ^2 test or Fisher's exact test and Cox regression using SPSS v15.0, South Asia, Bangalore, India.

Results: Of total 323 participants in CQ-PQ therapeutic trial, 114 participated in 15 months long follow up study. Of 114 participants, 28 (24.56%) recurred subsequently, including two participants with two recurrences and one participant with three recurrences. One patient did present with *P. falciparum* malaria after 3 months. The median duration of first recurrence was 3.14 months (IQR, 2.23 – 6.03) which ranged from 1.22 to 15.07 months. There were no clinical dissimilarities (p>0.05) among recurrence and non-recurrence groups. Participants with past history of *P. vivax* malaria had significantly higher odds of recurrence [HR (95% CI): 2.62 (1.24-5.54), p = 0.012]. The severity of disease (11.40%, 13/114) was not associated (p=1.00) with recurrence. Of 28 recurrent cases, 3 (10.71%) had severe malaria initially, however, none developed severe malaria during recurrences.

Conclusion: Despite complete adherence to 14 days PQ regimen, *P. vivax* results in substantial recurrences in Udupi taluk. Further, molecular investigations are required to determine the true relapse/reinfection proportion and their determinants. Patients with past history of *P. vivax* malaria are at high risk of recurrences.

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