Correspondence

Sample survey for indigenous cases of kala-azar in Assam by rk39 dipstick test

Sir,

In 1950s the Government of India under National Malaria Eradication Programme (NMEP) now National Vector Borne Disease Control Programme, launched massive insecticidal spraying with DDT for malaria vector control and kala-azar came to a halt in Assam as a collateral benefit of malaria eradication programme. As a result, there were no further reports of kala-azar from the northeastern region except some sporadic cases. We report here the re-emergence of kala-azar in Assam in outbreak form. An outbreak of fever in Chapaidang village, Chandrapur area of Kamrup Metro District in Assam was investigated during February 21 to 26, 2008. Chapaidang village with a population of about 800 is located on a foothill and is 20 km from Guwahati city. The local medical practitioner from the area recorded the presence of many febrile cases of longer duration presented with splenomegaly, anaemia, weakness and loss of weight not responding to antimalarials therapy and requested epidemiological investigation. Accordingly, we investigated the cause of febrile illness. During house-to-house visit all suspected subjects were enrolled after taking informed consent. Information like duration of fever, visit to other areas, other known ailments, their professions and recent treatment taken were recorded on a pre-designed proforma. Demographic data and previous record of Primary Health Centre revealed that the area was endemic for malaria. Looking into the patients’ clinical details, topography of the place and the key informants (doctors) description of cases, a primary suspicion of kala-azar was made. Ten randomly selected houses having congenial environment for vector (Phlebotomus argentipes) propagation were chosen for sand fly collection from the area.

A total of 28 blood samples from suspected symptomatic subjects were collected, and tested by rapid diagnostic kit (RDK) and peripheral blood Smear (PBS) thick and thin were done for malaria. Further, these samples were tested for kala-azar by immunodiagnostic test rk 39 (Kala-azar Detect Rapid Test; InBiOS, USA). Bone marrow biopsy / splenic aspiration were advised for demonstration of amastigote form [Leishman Donovan, (LD) bodies] of the parasite but due to unwillingness of participants it could not be done initially. However, later two participants agreed for bone marrow biopsy and after obtaining written consent, bone marrow biopsy was performed. Apart from this, 16 healthy contacts as controls (males 9 and females 7), average age 23.9 yr (range 1-55 yr) living in close vicinity of suspected kala-azar cases were also screened for kala-azar in order to find out subclinical cases, if any, and to follow them up for 3-6 months with the view that some of them might turn positive. All the 28 subjects were found negative for malaria, and 18 subjects (12 males 6 females, 64.28%) were found positive for kala-azar. All the 16 healthy controls were found negative for kala-azar. Two rk39 positive subjects who underwent bone marrow biopsy were found positive for LD bodies. Entomological collections were done using sticky trap and suction tube and flashlight during dusk and dawn from the selected houses. Of the 10 stick traps planted in each selected house for 12 h (1800 - 0600 h), 3 sand flies were collected. For indoor resting collection, three persons with suction tube and flashlight searched for 20 min in each house (total 10 houses covered) for sand flies between 0600 - 1000 h and four sand flies were collected. Man hour density (MHD) was 0.4. These flies were examined and confirmed as Phlebotomus argentipes. Due to low number of collection dissection for infectivity was not done. The specimen were stored for the reference at Regional Medical Research Centre, Dibrugarh and Rajendra Memorial Research Institute of Medical Sciences, Patna.
Average age of 18 positive cases was 23.5 yr (range 5-50 yr). The youngest subject found positive for kala-azar was 5 yr old boy and in his family all the four members were found positive. Duration of fever among the selected cases ranged from weeks to several months (longest 5 months) and palpable spleen up to 10 cm. Most of the positive subjects were from Boro and Hazong tribes of Assam. They had never gone out of Assam. Case history of some subjects revealed that in the past two years there were a few clinically suspected kala-azar cases from this area and were treated with sodium antimony gluconate (SAG). A case of post kala-azar dermal leishmaniasis (PKDL) was also found in this area, a 32 yr male who was treated wrongly for tuberculosis initially and later for leprosy after development of PKDL. The case was diagnosed and treated with anti-leishmanials drug in Kolkata during 2003 and was clinically cured.

All the rK39 positive cases (n=18) were treated with sodium stibo gluconate (SSG) by the concerned PHCs / Guwahati Medical College, Guwahati. All responded well with SSG and cured clinically. Demonstration of LD bodies in bone marrow confirmed the kala-azar cases in the study area. Healthy contacts found negative for kala-azar by rK39 remained negative in subsequent follow up.

After the early major epidemics of kala-azar in Assam in nineteenth century\(^1\), the sand fly, P. argentipes, the vector of kala-azar was eliminated due to extensive use of DDT\(^5\). In 1994, a survey of sand fly was done in Assam but P. argentipes could not be recorded\(^6\).

In the study area, most of the houses were kachacha mud houses, made up of thatch, sand and mud plasters. Peoples were of low socio-economic group and most of them worked as casual workers in nearby brickfields and agricultural field. Closed observation of their houses revealed that people often used cow dung and mud plastering in the inner walls of the houses. Temperature and relative humidity (RH) recorded during sand fly collection was 17-19\(^\circ\)C and 75 per cent respectively. The environment was congenial for sand fly propagation. Moreover, sleeping habit of these people also provided more chances for sand fly bites as many of them used to sleep on the ground with most of the body parts exposed. September to November and March to April are the ideal periods for sand fly breeding. In present situation record of P. argentipes during the month of February (winter) was a little unusual.

The present investigation confirmed the outbreak of kala-azar in the village of Chapaidang, Assam. Demonstration of amastigote form of parasite in bone marrow of the subjects found positive for rk39 and response of these cases to SSG treatment confirmed presence of kala-azar in the study area. Moreover, presence of P. argentipes and rK39 positive younger children (who never visited even outside of the district) provided evidence for local transmission of the disease. The reason for this epidemic could not be established. However, the presence of migratory workers to the nearby brickfields from endemic areas of the country as early as in 1980s and possibility of unreported cases of kala-azar left during the early period of vector control programme from this small pocket might be the cause of maintenance of local transmission that took an outbreak proportion under congenial condition.

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