

## Is active human schistosomiasis present in India?

Animal schistosomiasis is widespread throughout the Indian subcontinent and is present in two forms – nasal and hepatic. While nasal schistosomiasis is caused by *Schistosoma nasale*, a spectrum of blood flukes namely, *S. indicum*, *S. incognitum*, *S. spindale*, *Orientobilharzia dattai*, *O. turkasticum*, *O. harinasutai* and *Bivittobilharzia nairi* is responsible for the hepatic form in domestic and wild animals<sup>1</sup>. This has been well documented by various workers<sup>1-4</sup>. However, the case of human schistosomiasis is under controversy due to possible non-existence of three well-known human schistosomes or their intermediate hosts in the country; this is despite the reporting of *S. incognitum* from two human stool samples<sup>5</sup>, and a proven focus of urinary schistosomiasis in Gimvi village, Ratnagiri district, Maharashtra<sup>6</sup>. Later, interest in the search for human schistosomiasis took a back seat perhaps due to the complexity of the subject.

Though researchers were aware of cercarial dermatitis caused by animal or bird schistosomes in India<sup>7</sup>, its magnitude was first assessed by Narain *et al.*<sup>8</sup>, who reported its wide prevalence in the agricultural/rural population in Assam. Agrawal *et al.*<sup>9</sup> reported its wide occurrence in semi-urban population of Jabalpur city, dependent on local ponds for their daily needs. Further survey of the rural population of Chhattisgarh<sup>10</sup> revealed cercarial dermatitis being rampant in villages dependent on a lone pond for all their requirements. Occurrence of dermatitis or skin eruptions with bath in the ponds and presence of snails positive for cercariae in the ponds is suggestive of cercarial dermatitis.

The present work was undertaken in Kainwas village, Jabalpur district, known for the existence of animal schistosomiasis. Five hundred and seventy-four individuals were examined for dermatitis. Their stool and urine samples were collected and examined using acid-ether and concentration method for blood-fluke eggs. Urine samples were also tested for schistosome antigen using dipstick kit supplied by the European Veterinary Laboratory, Amsterdam, the Netherlands. The test is claimed to be sensitive and specific (at *Schistosoma* genus level) in detecting schistosome antigens in urine. The samples

were processed according to the guidelines provided by the manufacturer. The test was considered positive if both the bands (control and test) developed within 20 min of application.

Out of 574 individuals examined, 21 were found to have cercarial dermatitis while ten had a history of cercarial dermatitis. Out of these 31 individuals, five were positive for schistosome antigen. The presence of schistosome antigens in urine strongly suggests that such persons possess active schistosome infection and cercarial dermatitis may be a beginning of the syndrome and not the end. Further, the test is only *Schistosoma* genus-specific, whereas cercarial dermatitis is caused not only by *Schistosoma* species but also by avian schistosomes belonging to different genera. Therefore, it may be presumed that the test might have failed to detect live schistosomes of avian species. Again, importance of avian schistosomes cannot be ignored, particularly with reference to the work of Horak *et al.*<sup>11</sup> that nasal avian schistosomes take the nervous route both in avian and mammalian hosts, of affecting the central nervous system in human beings. All the stool and urine samples were negative for blood-fluke eggs. This is not surprising, as work on animal schistosomiasis has proved its utility in detecting patent schistosome infections in domestic animals in India<sup>1</sup>.

Our past and present work has consistently demonstrated that cercarial dermatitis is rampant in rural areas. The positive dipstick tests further suggest that it would be wrong to consider the syndrome confining to human skin alone. Rather, it suggests an active schistosome infection in the rural population leading to considerable pathology. However, the subject has not received proper attention probably due to difficulty in diagnosing the patent infection by conventional methods and also because most of the potentially susceptible human population belongs to the lower strata of the society, without any access to health facilities. Since the syndrome is rampant in rural areas, there is a need to investigate human schistosomiasis using modern diagnostic methods.

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