

Ara el Dr.
Le Pont.
Atentamente
Abraham G. Caceres
10/7/97



961
966

BRIEF COMMUNICATION
POSSIBLE ROLE OF *Lutzomyia maranonensis* AND *Lutzomyia robusta* (DIPTERA: PSYCHODIDAE) AS VECTORS OF HUMAN BARTONELLOSIS IN THREE PROVINCES OF REGION NOR ORIENTAL DEL MARAÑÓN, PERU

Abraham G. CACERES(1), Eunice A.B. GALATI(2), François LE PONT(3) & César VELASQUEZ(4)

KEYWORDS: Bartonellosis; *Lutzomyia maranonensis*; *Lutzomyia robusta*; Perú.

Human bartonellosis is found predominantly in Perú^{2,6,8,12,15}, as well as in Ecuador^{3,7,10,15} and Colombia^{6,13,15}.

In Peru, the disease is restricted to the valleys of the western-side and a few inter-andean and eastern-slopes of the andean valleys^{6,15,18} at altitudes between 1000 and 3200 masl. Most human cases are reported from the regions of Chavin, Nor Oriental del Marañón and Lima¹⁶.

Lutzomyia verrucarum is presumed to be the only vector of human bartonellosis in the valleys of Peru^{1,2,6,8,11,17,19}.

Our research objective was to detect the presence of *Lu. verrucarum* in various localities known to be endemic for human bartonellosis in three provinces of Region Nor Oriental del Marañón. Sandfly collections were made between 1987 and 1992 during four visits to bartonellosis-endemic provinces: San Ignacio (districts of San José de Lourdes: 1020-1260 m and La Coipa: 1200-1560 m), Jaén (districts of Santa Rosa: 1300-1680 m and Jaén: 1220-1680 m) and Utcubamba (districts of Lonya Grande: 1200 m and El Milagro: 1200-1540 m).

We captured sandflies with intra-domiciliary CDC light traps, with peri-domiciliary Shannon traps, around houses using human bait, and in resting places with manual aspirators.

Captures were made in and around houses where cases of human bartonellosis had been recently reported. Sandfly spe-

cies were identified taxonomically using available bibliography⁴.

A total of 2774 specimens were captured (1958 females and 816 males). Table shows the percentages and species of captured *Lutzomyia*.

Human bartonellosis has a seasonal transmission, with most cases reported in the months of January to June when rainfall is greatest^{5,9,14,16}. Captures were made during the rainy season in four periods. Surprisingly, very few specimens of *Lu. verrucarum* were caught. This observation suggests that *Lu. verrucarum* may not be primary vector of human bartonellosis in the three provinces studied. The great abundance of *Lu. robusta* and *Lu. maranonensis* in intradomiciliary areas in all three provinces implicates them as the most likely natural vectors of the disease.

Lutzomyia robusta was the major species found inside dwellings where cases of bartonellosis had been reported. *Lu. maranonensis* was caught most often using human bait.

As *Bartonella bacilliformis*, the causative organism of bartonellosis, has never been isolated from *Lu. verrucarum*, the evidence for it being considered the natural vector remains tenuous^{1,8,11,17,19}. In this study no attempts were made to detect *B. bacilliformis* but a very interesting approach would be look for the presence of this organism in the mid-intestine sandfly using a specific Polymerase Chain Reaction assay (PCR).

(1) División de Entomología. Instituto Nacional de Salud, Lima, Perú.

(2) Departamento de Epidemiología. Faculdade de Saúde Pública. Universidade de São Paulo, São Paulo, SP, Brasil.

(3) ORSTOM. Centre de BONDY. Bondy, France.

(4) Hospital Apoyo de Bagua. Sub Región de Salud I Jaén. Región Nor Oriental del Marañón, Perú.

Correspondence to: Abraham G. Cáceres. División de Entomología. Instituto Nacional de Salud. Apartado Postal 451. Lima 100, Perú.

TABLE 1
Sand-flies captured in: San Ignacio, Jaén and Utcubamba, Región Nor Oriental del Marañón, Perú (1987-1992)

Species	Prov. de San Ignacio				Prov. de Jaén				Prov. de Utcubamba				Total	
	San José de Lourdes		La Coipa		Santa Rosa		Jaén		Lonya Grande		El Milagro			
	N°	(%)	N°	(%)	N°	(%)	N°	(%)	N°	(%)	N°	(%)	N°	(%)
<i>Lu. robusta</i>	713	46.45	280	74.07	194	69.04	350	74.79	58	56.86	7	70.00	1602	57.74
<i>Lu. maranonensis</i>	642	41.82	59	15.61	81	28.82	85	18.16	19	18.63	2	20.00	888	32.00
<i>Lu. ayacuchensis</i>	97	6.32	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	97	3.50
<i>Lu. sallesi</i>	53	3.45	1	0.27	4	1.42	29	6.20	0	0.00	0	0.00	87	3.14
<i>Lu. castanea</i>	20	1.30	34	8.99	0	0.00	1	0.21	17	16.67	0	0.00	72	2.60
<i>Lu. pallidithorax</i>	9	0.59	0	0.00	0	0.00	2	0.43	0	0.00	0	0.00	11	0.40
<i>Lu. pia-like</i>	0	0.00	2	0.53	0	0.00	0	0.00	3	2.94	0	0.00	5	0.18
<i>Lu. verrucarum</i>	0	0.00	0	0.00	0	0.00	0	0.00	4	3.92	0	0.00	4	0.14
<i>Lu. cayennensis</i>	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	10.00	3	0.11
<i>Lu. cayennensis</i>	1	0.07	0	0.00	1	0.36	0	0.00	0	0.00	0	0.00	2	0.07
<i>Lu. cajamarcensis</i>	0	0.00	2	0.53	0	0.00	0	0.00	0	0.00	0	0.00	1	0.04
<i>Lu. sp. serie Verrucarum</i>	0	0.00	0	0.00	0	0.00	0	0.00	1	0.98	0	0.00	1	0.04
<i>Brumptomyia</i> sp.	0	0.00	0	0.00	1	0.36	0	0.00	0	0.00	0	0.00	1	0.04
<i>W. phlebotomanica</i>	0	0.00	0	0.00	0	0.00	1	0.21	0	0.00	0	0.00	1	0.04
Total (%)	1535	(100.00)	378	(100.00)	281	(100.00)	468	(100.00)	102	(100.00)	10	(100.00)	2774	(100.00)

ACKNOWLEDGEMENT

To Consejo Nacional de Ciencia y Tecnología (CONCYTEC), Lima, Perú, who provided part of the financial sources for field work.

REFERENCES

- BATTISTINI, T. – La verrue peruvienne (sa transmission par le Phlebotome). *Rev. sud-amer. Med. Chirurg.*, 2:719-724, 1931.
- CACERES, A. – Distribución geográfica de *Lutzomyia verrucarum* (Diptera, Psychodidae) (1913) (Diptera, Psychodidae, Phlebotominae) vector de la bartonellosis humana. *Rev. Inst. Med. trop. S. Paulo*, 35:485-490, 1993.
- CARVAJAL H.,L.; PAULSON B.,G.; ZEREGA P.,F.; LOAIZA V.,M. & PALACIOS C.,M. – Bartonellosis en el Ecuador. Verruga peruana. Su estudio histórico, epidemiológico, inmunológico, clínico e histopatológico. *Rev. peru. Hig.*, 31:37-47, 1978.
- GALATI, B.E.A. – Sistemática de Phlebotominae (Diptera, Psychodidae) das Americas. São Paulo, 1990. (Tese de Doutorado – Faculdade de Saúde Pública, Universidade de São Paulo).
- GOMEZ, M. – Epidemiología de la enfermedad de Carrión o verruga peruana en las provincias de Yauyos y Cañete, 1914. (Tesis de Bachiller). In: ARCE, J., ed. CONGRESO MEDICO LATINO AMERICANO, 5., Lima, Sanmartí. 1914. Resumen. p. 103-138.
- HERRER, A. – Epidemiología de la verruga peruana. Lima, Gonzales-Mugaburu, 1990.
- HERTIG, M. – Cultivo de la *Bartonella bacilliformis* de un caso de verruga peruana en el Ecuador. *Bol. Ofic. sanit. panamer.*, 19:170-178, 1943.
- HERTIG, M. – Phlebotomus and Carrion's disease. *Amer. J. trop. Med.*, 22 (suppl. 5):1-81, 1942.
- MAGUIÑA, C. & PEREZ, E. – La enfermedad de Carrión y la leishmaniasis andina en la región de Conchucos, distritos de Chavin, San Marcos y Huántar, provincia de Huari, departamento de Ancash. *Diagnostico*, 16:5-12, 1985.
- MONTALVAN, J.A. – Un foco de bartonellosis en el Ecuador. *Bol. Ofic. sanit. panamer.*, 19:154, 1940.
- NOGUCHI, H.; SHANNON, R.; TILDEN, E.B. & TYLER, J.R. – Etiology of Oroya fever. XIV. The insect vectors of Carrion's disease. *J. exp. Med.*, 49:993-1008, 1929.
- ODRIOZOLA, E. – La maladie de Carrión ou la verruga peruvienne. Paris, Carré y Naud, 1898.
- PATIÑO-CAMARGO, L. – Un nuevo foco de bartonellosis en América. *Bol. Ofic. sanit. panamer.*, 18:305-313, 1939.
- PEREZ, N.V. – La verruga peruana o "enfermedad de Carrión" en el departamento de Cajamarca. In: ANALES DE CONGRESO MEDICO LATINO AMERICANO, 5., Lima, Sanmartí, 1914. Resumen. p. 157-190.
- REBAGLIATI, R. – Verruga peruana (enfermedad de Carrión). Lima, Imprenta Torres Aguirre, 1940.
- SANCHEZ, P. – Algunos aspectos epidemiológicos de la enfermedad de Carrión. *Rev. Soc. peru. Epidem.*, 1:1-15, 1986.
- SHANNON, R. – Studies on Carrion's disease. IV. Ecological evidence indicating that *Phlebotomus* is the transmitter of verruga. *Amer. J. Hyg.*, 10:88-111, 1929.
- SOLANO, L.; QUIROZ, C.; ALARCON, J.; LUNA, A. & CHUMBE, W. – Situación epidemiológica de la bartonellosis humana en San Ignacio, Cajamarca, Perú. *Bol. Inst. Med. trop. "Daniel A. Carrión" UNMSM*, 2:1-4, 1983.
- TOWNSEND, C.H. – La conquest of verruga. A brief statement of results of the investigation. *Peru today*, 6:57-67, 1914.

Recebido para publicação em 03/07/1996
Aceito para publicação em 04/02/1997