

## RESEARCH NOTE

## Perianal Integument of the Nymph and Adults Stage of *Amblyomma cajennense* (Fabricius, 1787) (Acari: Ixodidae): a New Cuticular Structure by Scanning Electron Microscopy

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The integument of ixodids is, generally, divided into two morphological types, and each of them seems to perform distinct physiological roles. The first variant is sclerotized integument, which functions as a rigid surface for muscle attachment. This type of integument is found in the mouthparts, legs and dorsal shield of body. The second variant is non sclerotized integument found in the opisthosoma, joints of legs and mouthparts (ME Nathanson 1967 *Ann Ent Soc Amer* 60: 1125-1135, RH Hackman & BK Filshie 1982 p. 1-39. In FD Obenchain & R Galum, Pergamon Press, Oxford, TA Wooley 1988 J Wiley & Sons, New York) that permits the increase of volume during blood feeding.

Morphological scanning electron microscopy (SEM) studies of Ixodidae (DR Arthur & JGH Londt 1973 *J Soc Sth Af* 36: 87-116, JGH Londt & DR Arthur 1975 *J Ent Soc Sth Af* 38: 321-340,

CM Clifford et al. 1983 *Onderstepoort J Vet Res* 50: 77-89, CE Yunker et al. 1986 *Proc Entomol Soc Wash* 88: 609-627, AA Guglielmone et al. 1990 *Acarologia* 31: 143-159) have been carried out by many acarologists, but there have not been reports on the integumentary surface of the perianal region.

The aim of the present paper is to show a new cuticular structure in the perianal region of the nymphs and adults of *A. cajennense* observed by SEM.

Nymphs and adults of *A. cajennense* were obtained in the laboratory; engorged larvae and nymphs were collected from horses in the Willhem Otto Neitz Parasitological Research Station of Universidade Federal Rural do Rio de Janeiro, Itaguaí, State of Rio de Janeiro, Brazil. The engorged stages were maintained in the laboratory at room temperature (25-29°C) and 80 ± 10% RH until ecdysis. Nymphs and adults were maintained unfed for 24 hr after hatching and then killed in hot water (± 70°C) and preserved in 70% ethanol. Unfed nymphs and adults chemically fixed, were prepared for SEM using the method of JE Keirans et al. (1976 *Acarologia* 18: 217-225), adjusted to the adopted procedures of the Electronic Microscopy Laboratory, Instituto de Biofísica "Carlos Chagas Filho", Universidade Federal do Rio de Janeiro. The specimens were observed by Stereoscan 200, at 16 Kv and JEOL-JSM-25II at 15 Kv.

In ixodid ticks, the anal aperture is located in the median portion of opisthosoma (Fig. 1), and is protected by the anal plate, in nymphs and adults. As observed by SEM, in *A. cajennense* nymphs, males and females, this plate is limited to anal aperture and anal groove, as shown in Fig. 2. We also observed that the anal plate and anal groove border integument present a large area with digitiform protuberances and an absence of deep folds that appear on the remaining ventral areas of idiossoma in adults, nymphs, and larvae, and alloscutum of females, nymphs, and larvae. In Figs 3,4,5 details are shown of the anal plate and anal groove border integument of *A. cajennense* male and nymph.

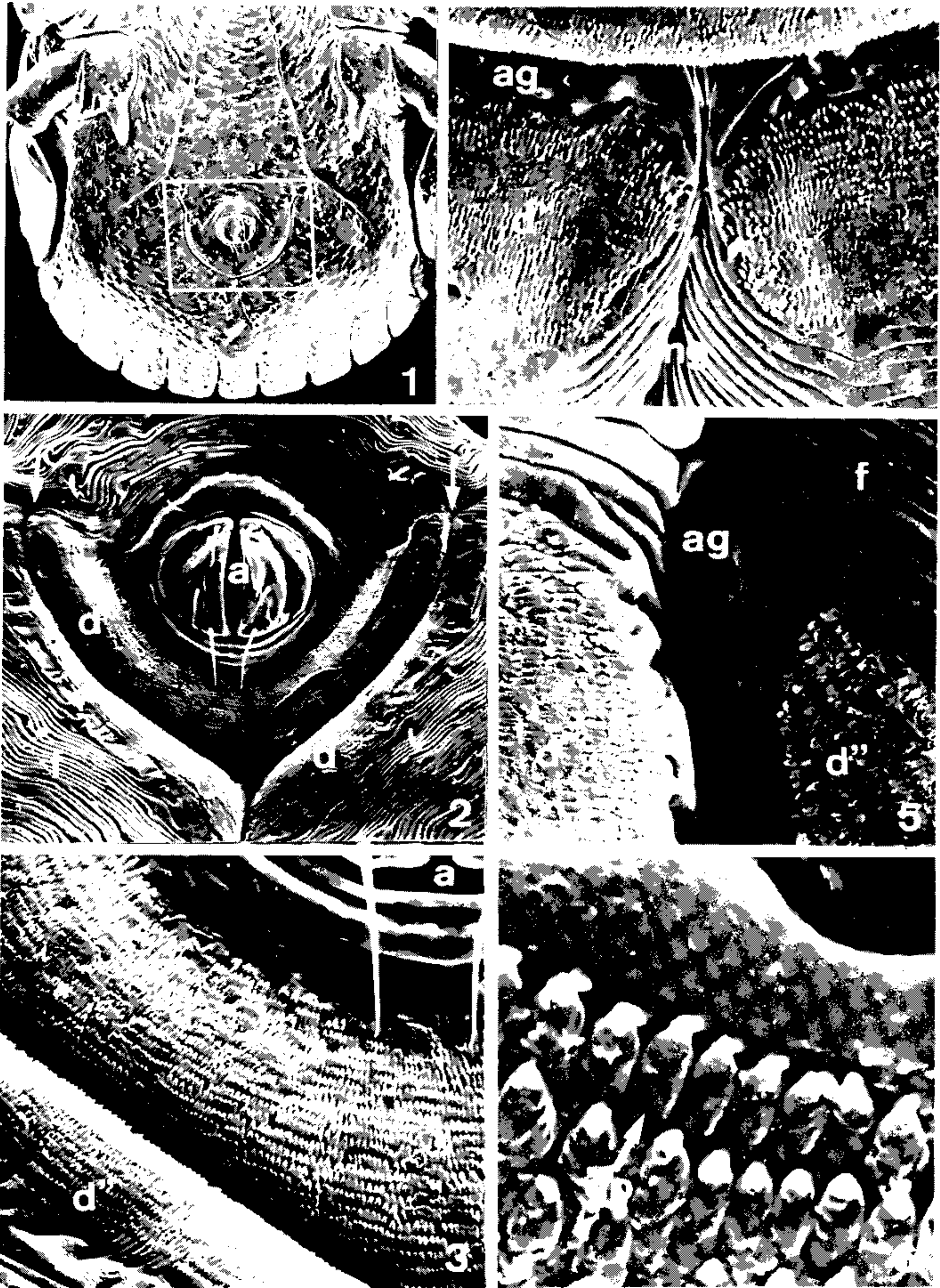
The digitiform protuberances, as depicted in Fig. 6, are arranged uniformly with the apical portion towards the gnathosoma of the tick.

Details of the anal groove, in *Ixodes sigelos* Keirans, Clifford & Corwin, 1976 were observed by SEM, where the surface view of the anal plate showed an integument of the folded type (Keirans et al. *loc. cit.*). L Van Der Hammen (1983 *Zoologische Meded Leiden* 57: 209-242) reported that the anus is bordered by anal valves which can

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*Amblyomma cajennense* - Fig. 1: male ventral view. 142x, 16Kv. Marked area: anal and perianal region. Fig. 2: nymph, 316x, 15Kv. Anal and perianal region. Anal aperture (a); anal groove (arrow); folded integument (f), digitiform integument (d). Fig.3: nymph, 1053x, 15 Kv. Detail of perianal region. Anterior (d') and posterior (d'') border of the anal groove with digitiform integument. Anal aperture (a). Fig. 4: male, 1714x, 16 Kv. Detail of posterior border of the anal groove (d''), and anterior portion of median postanal groove (mg). Anal groove (ag). Fig.5: male, 3158x, 15 Kv. Detail of the apical right arms of anal groove. Anal groove (ag), folded (f) and digitiform (d', d'') integument. Fig. 6: nymph, 28640x, 16 Kv. Detail of the digitiform integument. Digitiform protuberance (dp).

be surrounded by a sclerotized ring without comments on the alterations in the tegumentar structure in this region. However, in many illustrations of ticks of the genus *Amblyomma*, including *A. cajennense* by HB Aragão and F Fonseca (1961 *Mem Inst Oswaldo Cruz* 59: 131-148) we can verify that the anal region is marked with a different kind of shading that together with preliminary observations in others *Amblyomma* species, suggests that the presence of this newly described cuticular struc-

ture in the perianal region, easily observed using light microscopy, is common to this genus. However additional comparative studies are needed.

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