

Comparison between *in vivo* measurement of the Montenegro skin test and paper recording

The Montenegro skin test (MST) is the main complementary exam for the diagnosis of American cutaneous leishmaniasis (ACL) and evaluates the delayed hypersensitivity reaction to *Leishmania* antigens. The antigen is injected intradermally into the forearm and, after 48 hours, the presence of local induration is evaluated. Induration diameters of 5 mm or more are considered to be positive. Sokal¹ observed that some professionals encounter difficulties during the tuberculin test in delimiting the margin of the induration by palpation. Additionally, discordance in the reading was observed between trained professionals. The author therefore developed the ballpoint pen technique, in which a line is drawn with a ballpoint pen from a point about 2 cm away from the indurated area toward its center until noting resistance when the margin of the induration is reached. Reading of the reaction became possible after the introduction of the stamping technique in which paper soaked in 70% alcohol is pressed on the site of the induration. However, no studies are available in the literature comparing measurements performed *in vivo* at the site of application of the test and those recorded on paper.

A total of 154 patients with a clinical suspicion of ACL seen at Instituto de Pesquisa Clínica Evandro Chagas, Fiocruz, were submitted to the MST. After 48 hours, *in vivo* reading was performed by the ballpoint pen technique (Fig. 1). In addition, a paper recording was obtained from each reaction and stored for subsequent measurement by another professional. Both the

in vivo and paper measurements were performed within the demarcation line with a millimeter-graded ruler. The results of the two measures were compared by the kappa test using the Epi-Info 6 program. A total of 143 results were concordant and 11 were discordant in terms of a positive or negative MST. The kappa index of agreement between the two measurements was 0.83%, with an approximate standard error of 0.048 and $P < 0.0001$ (Table 1). A difference of 1 mm between readings was observed in 59 patients, and differences of 2–6 mm were observed in 18. However, the paper reading resulted in a negative test (diameter <5 mm) in only 11 patients. These results suggest that the paper recording might be used as an alternative to the direct reading, despite the 11 discordant patients. In addition, the paper with the tracing provides a record and documentation of the exam and may serve as a quality control for the evaluation of services standardizing the technique.

Table 1 Comparison of the results of the Montenegro skin test (MST) obtained with the ballpoint pen technique directly at the site of application to the forearm and by paper recording in 154 patients with American cutaneous leishmaniasis

MST measurement		Forearm		Total
		Positive	Negative	
Paper	Positive	102	0	102
	Negative	11	41	52
Total		113	41	154



Figure 1 Measuring and recording of the MST result with the ball point pen method. 1 – preparing the induration area; 2 – demarcation with a ball point pen; 3 – recording the *in vivo* result with a ruler; 4 – documentation of the ball point pen drawn with a paper embedded with alcohol

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Reference

- 1 Sokal JE. Editorial: Measurement of delayed skin-test responses. *N Engl J Med* 1975; 293: 501-502.

Malignant adnexal tumors: diagnostic and therapeutic challenges in Calabar, Nigeria

Adnexal carcinomas of the skin are a rare, highly malignant, and extremely diverse group of neoplasms. They pose a significant diagnostic and therapeutic challenge.¹ Often adnexal tumors are classified together as sweat glands. The apocrine and eccrine glands are two distinct types of glands differing in embryological origin and function. Apocrine glands are derived from pilosebaceous follicles (includes hair follicles and sebaceous glands). The eccrine glands are considered true sweat glands.² Sebaceous carcinoma is a rare, aggressive, malignant tumor derived from the adnexal epithelium of sebaceous glands. It may arise in ocular and extraocular sites.³ Extraocular sebaceous carcinoma is a rare tumor usually found on the head and neck.⁴ Eccrine porocarcinoma is a rare tumor of the skin occurring most often in the elderly and affecting more men than women. It may develop from a pre-existing benign poroma.⁵ They are destructive lesions with a tendency to local recurrence.⁶ We present these cases of malignant adnexal tumor to highlight the rarity of this lesion as well as the diagnostic and therapeutic challenges in our setting.

We evaluated the clinical histories and treatment outcomes of patients with a histologic diagnosis of malignant adnexal tumor who presented to the University of Calabar Teaching Hospital, Calabar, Nigeria, during the five year period, (January 2000–December 2004). This was compared with the total number of patients diagnosed with cutaneous malignancies during the same period.

Table 1 shows the clinico pathological features and outcomes of management of the three patients with

malignant adnexal tumor. Three patients (two female and a male) accounted for 5% of cutaneous malignancies during the period of study.

The ages ranged from 36 to 58 years (mean 47 years) with a patient each in the fourth, fifth, and sixth decades. Two lesions involved the scalp and one the vulva. Presentation (time when lesion was first noticed at presentation in the hospital) was late, and the periods ranged from 1 to 2 years. The clinical features were that of huge fungating lesions with raised and everted edges. Two patients had regional lymphadenopathy (Table 1, Nos. 1 and 2).

Diagnoses in all the cases were histologic. The diagnosis of sebaceous carcinoma that involved the scalp (occipital) in a male and the vulva was made in two patients (Table 1, Nos. 3 and 1). The third (Table 1, No. 2) had malignant eccrine porocarcinoma; the cells were basaloid, low cuboidal, and envelope areas of keratinous epidermis thereby impacting a feeling of keratinization. There were areas of cyst formation and vascular channels and cells were pleomorphic and mitosis frequent. There were two recurrences in the male patient with sebaceous carcinoma. He was lost to follow-up two months after the last surgery. The other two patients (one each of sebaceous and sweat gland tumor) were lost to follow-up prior to any form of treatment.

Malignant adnexal tumor is a rare tumor in our region (incidence 5% of cutaneous malignancies), and other studies attest to rarity of this tumor generally.^{1,3,7} There were three cases, two patients with sebaceous carcinoma and a patient with malignant eccrine tumor. Extraocular sebaceous carcinoma is a rare tumor usually found on the