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Estrogen metabolites for the diagnosis of schistosomiasis associated urinary bladder cancer

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In a recent issue of Cancer Letters Gouveia and colleagues [1] studied a series of 40 Angolan patients diagnosed with urogenital schistosomiasis (UGS). They reported that 45% of them presented UGS-associated squamous cell carcinoma (SCC) and/or urothelial cell carcinoma [1]. In addition these authors performed Liquid Chromatography-mass spectrometry and this analysis revealed numerous estrogen like metabolites. These schistosome infection-associated metabolites included catechol estrogen quinones (CEQ) and CEQ-DNA-adducts, two of which had been identified previously in S. haematobium [1,2,3]. They conclude suggesting that these metabolites can be expected to provide deeper insights into the carcinogenesis UGS-induced bladder cancer, and as biomarkers for diagnosis and/or prognosis of this neglected tropical disease-linked cancer.

The results we have recently obtained partly confirm and partly diverge from the results reported by Gouveia and colleagues [1]. We have studied 300 individuals from the North of Angola [4]. Prevalence of S. haematobium infection was 71.7% (215/300). Ultrasound and cystoscopy examinations revealed pathological conditions at the urinary tract in all examined in a sub-sample of 29 (13.5%) of the patients diagnosed with UGS. One case (0.3%) presented with a vesical tumor. This tumor was classified as squamous cell carcinoma (SCC) [4]. The low frequency of tumors found in our series in comparison to the high frequencies of tumors in the series of Gouveia et al [1] suggests that bladder cancer associated to UGS might have an increased burden than already described previously. In fact other authors reported that the incidence of SCC is 3–4/100 000 cases [5] which is more in agreement with our study.

In keeping with the results of Gouveia and colleagues [1] we have previously described estrogen metabolites to be associated with schistosomiasis infected persons [6,7,8]. Our group has been working on the identification of parasite derived compounds that might be implicated in the carcinogenesis of *S. haematobium*. The majority of these compounds are catechol estrogens. The carcinogenic effect of this estrogen–DNA adduct mediated pathway

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could explain the link between chronic schistosomiasis haematobia and SCC of the bladder [6,7,8]. The association found by Gouveia and colleagues [1] and ourselves between estrogen metabolites and schistosomiasis associated bladder cancer remains to be clarified.

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