

Estrogen Metabolites for the Diagnosis
of Schistosomiasis Associated Urinary
Bladder CancerMonica C Botelho^{1,2}, Helena Alves¹ and Joachim Richter³¹INSA, National Institute of Health Dr. Ricardo Jorge, Portugal²IS, Instituto de Investigação e Inovação da Universidade do Porto, Portugal³Tropical Medicine Unit, Department for Gastroenterology, Hepatology and Infectious Diseases, Heinrich-Heine University, Germany

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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 estrogens 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* [1-3]. 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 3-4/100000 cases [5] which are 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 [6-8]. 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 could explain the link between chronic *schistosomiasis haematobia* and SCC of the bladder [6-8]. The association found by Gouveia and colleagues [1] and our selves between estrogen metabolites and schistosomiasis associated bladder cancer remains to be clarified.

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