



Difficult Causality Relationship between Colorectal Cancer and Schistosomiasis

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Abstract

The purpose of the study was to determine the nature of the association between colorectal cancer and schistosomiasis infection. This was a retrospective and descriptive study of colorectal cancers and to identify cases associated with schistosomiasis. A total of 814 cases of rectal colorectal cancer were collected and 3 cases were associated with schistosomiasis. These are 2 cases of Liberian adenocarcinoma and one case of malt lymphoma. The patients were all farmers and from rural areas. A co-infection with HIV was found in his 3 patients. Our data show an extreme rarity of the association colorectal cancer and schistosomiasis; it seems difficult to conceive of a causal relationship.

Keywords Colorectal cancer · Schistosomiasis · HIV · Carcinoma · Lymphoma

Background

Cancer will be the third leading cause of death in Africa in 2020 according to WHO [1]. Schistosomiasis is a widespread communicable disease in the tropics and subtropics and affects more than 200 million people worldwide [2]. Infestation with schistosomiasis leads to persistent chronic inflammation and produces a carcinogenic enzyme, beta-glucuronidase [2]. The association of schistosomiasis and bladder cancer is well known and widely documented in the

literature [3]. The aim was to find out if this association of causality could be observed at the colorectal level and in other words, if the fight against schistosomiasis would represent an inevitable axis of prevention of cancers in tropical countries.

Methodology

This is a retrospective and descriptive study of all cases of colorectal cancer diagnosed from 2000 to 2017 (18 years) in Togo in the only laboratory of pathological anatomy. From these colorectal cancers, we have identified cases associated with schistosomiasis. The data was collected in the laboratory records. The samples come from health facilities in Lomé and also provincial hospitals. These samples were biopsy fragments and 10% formalin fixed surgical specimens for examination.

Results

It was collected a total of 814 cases of colorectal cancer representing 10.9% (7436cas) of all cancers. The average age of the patients was 44.8 years. We noticed 3 cases (0.4%) of colorectal cancers associated with schistosomiasis. Two cases have been observed in the female sex and one case in a man. All three patients had known HIV co-infection. They were farmers living in rural areas. Rectorrhagia was the reason

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for consultation in both women, and weight loss associated with constipation in men. At the macroscopic level, these were ulcero-budgennate lesions (2/3 cases) located in the sigmoid and infiltrative in the right colon (1/3 cases) in humans. The histological types of associated colorectal cancers were: Liberkunian adenocarcinoma (2 cases) and 1 case of malt lymphoma. The histological diagnosis of schistosomiasis was made on the detection of often calcified eggs with bilharzial granuloma.

Discussion

Ferguson in 1911 was the first to mention schistosomiasis and cancer after observing in Egypt, 40 cases of vesical cancers associated with schistosome eggs in 76% of cases [4]. Since then, several epidemiological and experimental studies have confirmed this association [2, 3]. The association between schistosomiasis and colorectal cancer has long been suggested in the literature, but is not uniformly accepted [1]. In the Far East, considerable evidence supports an etiological link between *Schistosoma japonicum* and colorectal cancer [3]. However, available data on the role of *Schistosoma mansoni* in colorectal carcinogenesis are contradictory and most often do not show causality [2].

At present, only squamous cell carcinoma of the bladder is recognized as bilharzian. The most accepted theory is the inflammation-hyperplasia-metaplasia-dysplasia-cancer sequence [3]. It would be quite logical to think that in the colorectal; schistosomiasis can also cause an inflammation-hyperplasia-dysplasia-cancer sequence.

In our series, colorectal cancer associated with schistosomiasis accounted for 0.4% of all colorectal cancers. The association rates found in our series seems too low to maintain some causality between schistosomiasis and colorectal cancer. In Africa, three cases of rectal cancer associated with *Schistosoma hematobium* bilharzia have been reported during the last decade, including two in Senegal [5]. The histological types of colorectal cancers associated with schistosomiasis in our series were the same as those found in Senegal [5].

It therefore seems difficult to conceive of a causal relationship, because of the extreme frequency of bilharziasis in our environment and the rarity of its association with colorectal cancer. Bilharziasis raises the problem of access to water and is responsible for still avoidable complications [2]. In the absence of vaccination, the focus should be on prevention through public health education. Praziquantel is almost the ideal antibilharzian, the only active agent on all varieties of schistosomiasis. The treatment of definitive lesions is surgical [1, 5].

Conclusion

At present, there is insufficient evidence in Africa of a causal relationship between schistosomiasis and colorectal cancer. This study on the association of colorectal cancer and schistosomiasis also reveals a co-infection with HIV. Could we believe that the AIDS virus interacts with schistosomiasis to induce cancer?

Author's Information TD, TDj and GNK are medical doctors in pathology; SD and FA are medical doctors in visceral surgery.

Authors' Contributions TD: is responsible for the conception of the study, participated in the study design, performed the laboratory analysis and interpretation, and wrote the paper. TDj, SD, and FA were involved in the clinical and therapeutic management of the patient; they have reviewed the paper. GNK was responsible for the overall scientific management of the study and the preparation of the final paper. All the authors have read and approved the final paper to be submitted for publication.

Compliance with Ethical Standards

Ethics Approval and Consent to Participate This study received approval from the head of the laboratory department to be conducted (Ref N° 08/2017/LAP/CHUSO).

Consent to Publish Written informed consent for publication of their clinical details and clinical images was obtained from the patient. A copy of the consent form is available for review by the Editor of this journal.

Availability of Data and Materials All data generated or analysed during this study are included in this published article.

Conflict of Interests The authors declare that they have no competing interests.

Abbreviations AIDS, Acquired Immune Deficiency Syndrome; HIV, Human Immunodeficiency Virus; WHO, World Health Organization

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