Does Bodily Temperature Explain the Differential Incidence of Gonadal Burkitt Tumor?

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Abstract

Whereas the ovary lies within the warm depth of the pelvis, its homologous counterpart, the testis, hangs coolly outside on account of the natural function of the cremaster muscles of the scrotum. Therefore, it is epidemiologically unique that 18 cases of ovarian Burkitt tumor were found against one testicular case in a 30-year biopsy series obtained among a Nigerian ethnic group. Accordingly, it is suggested that temperature is at play. Moreover, this hypothesis should be put to the test along the Burkitt belt worldwide, seeing that the environment itself is in keeping with the experience of a UK group [4] that establishing a histopathology data pool facilitates epidemiological analysis. Therefore, the present paper concerns the findings on the ovary and testis with special reference to Burkitt's lymphoma.

2. Keywords: Burkitt; Tumor; Gonad; Ovary; Testis; Temperature

Introduction

Although the ovary and the testis are homologous reproductive members of the human body, the one lies within the warm depths of the pelvis while the other hangs coolly outside. This is due to the natural temperature regulation which is a favorable function of the scrotal muscles [1]. Does this snug site confer any advantage in disease? In particular, consider the Burkitt lymphoma with reference to these two organs of reproduction. Interestingly, I was able to publish on both of them in relation to tuberculosis [2]. The same applied to jaw tumors in which Burkitt's tumor is known to feature, revealing male: female ratio as 6:1 [3]. Therefore, a series containing both testis and ovary was obtained and analyzed. This is important to extend this concept in order to cover surgical biopsies; those are utilized in this paper.

Results

In my capacity as the sole pathologist based at a Reference Pathology Laboratory serving the Ibos [5], a populous ethnic group in Nigeria, West Africa, I was in a good position to publish on both the testis and the ovary as regards Burkitt's lymphoma.

Analytical study was carried out between 1970 and 2000. It revealed a total of 134 cases. Surprisingly there was, but one case of it is in the testis against 18 ovarian such tumors (figure 1) which shows the basic diagnostic starry-sky appearance. Therefore, it became necessary to develop a hypothesis for its explanation, especially as important principles of science may be discovered.

Discussion

Since there were many ovarian cases as opposed to the single testicular case, it seems to me that nature has provided in this way data which are exploitable. In this context, it is well to remember Julius Cohnheim [6], a famous German pathologist, who said that autopsy findings "are all in a manner experiments instituted by nature, which we need only rightly interpret to get a clear idea of the causes, laws of growth, and significance of the tumors". It is important to extend this concept in order to cover surgical biopsies; those are utilized in this paper.

It is necessary to put that the present material in focus with already published data. In particular, Burkitt himself paved the way as reported by Magrath [7], namely, that by his inherited observational skills, he was able "to map the distribution of the African lymphoma". The map of Africa shows the "lymphoma belt" in which Burkitt lymphoma occurs at high incidence. Furthermore, as Orem and his group surmised [8], the geographical variation of the illness was that "the association between humidity, latitude and heat factors linked to the endemcity of malaria and Burkitt's lymphoma."

Heat has appeared here. Is it of relevance here? Clearly, the seeming reluctance to invade the testis contrasts with the ovarian predilection. It is hypothesized, that the difference is probably not one of structure but of site with reference to temperature. Accordingly, this odd pattern is open to research worldwide.

Hitherto, in African epidemiologic studies [9], jaw tumors had gained notoriety. Is biopsy preference at work? Specifically, is orchidectomy operation resisted by the families or by the patients themselves? No! My contemporaneous work [10] published in 1977 dealt with 21 testicular samples of which 5 were incisional biopsies and 16 were orchidectomies. Accordingly, my data is probably representative.
It may be added that my experience of testicular diseases covered 12 hospitals utilized by 16 doctors. Curiously, apart from the expected infarction of this organ, odd findings were single instances of associated cholesterol clefts in the epididymis as well as a microabscess. In other words, my epidemiological data pool is capable of demonstrating anything which is unusual.

Eight single ovarian cases were obtained [11-19] in the literature, as contrasted by 2 males in one paper [20] and a single male elsewhere [21]. I was not able to get epidemiologic data from all over the world with reference to gender differences. Moreover, during the period of this study, histologic subtypes were not recognized.

**Conclusion**

Had testicular Burkitt lymphoma been common in the community, the present series have demonstrated it. Accordingly, it is hypothesized that patterns should be delineated in other areas of the Burkitt belt in Nigeria [22], India [23], and elsewhere. Such data is recognized. During the period of this study, histologic subtypes were not.

**References**


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