Case Report

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The Pathogenesis of Paragonimiasis and Kwashiorkor as Infective Malnutrition Diseases During the Nigerian Civil War

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Abstract:

The Nigerian Civil War raged between 1967 and 1970. During this period, because of the Federal Government's blockade of the secessionist Eastern Region, there was the disease called "kwashiorkor." It was directly attributable to malnutrition and so was paragonimiasis. Both diseases presented remarkable features of pathogenesis including the author's discovery of the responsible adult worms of *Paragonimus uterobilateralis*. It is concluded that, although international assistance programme was beneficial, well planned public policies would eliminate war and enthrone peace worldwide especially in Developing Countries

Keywords: Civil War, Malnutrition, Kwashiorkor, Paragonimiasis, Pathogenesis

Introduction:

The Merriam-Webster's Collegiate Dictionary¹ recently defined "Kwashiorkor" as a word which came into existence in 1959 as "severe malnutrition in infants and children especially of impoverished regions caused by a diet low in proteins." Can this be investigated in the light of "pathogenesis," i.e., the origination and development of disease?

Disease of this name was brought into the picture through the planned limitation of proteins as well as foods in general. These were, on purpose, severely restricted during the Nigerian Civil War of 1967-1970. In effect, this was the weapon devised by the Federal Government against the secessionist part of the country. In fact, this weapon became increasingly effective as the war progressed. It was at this stage that there was a desperate shift to the eating of crabs.²

Investigation:

Crabs were involved in a peculiar way as follows: "the severe shortage of traditional protein sources and poor cooking facilities led to greatly increased consumption of inadequately cooked

crabs."² Put differently, there was "a direct result of the depressed conditions during the period - for example, a change to lower forms of life as a source of food protein, and a reduction in cooking facilities."³ In effect, the paragonimus parasites sojourning naturally inside the common crabs were still very much alive when they gained ready entrance into the many beleaguered bodies!

Bodies of the sufferers were definitely affected but the lungs featured particularly. There, the parasites grew and matured naturally. Alas! The resulting cough was coupled with copious bloody sputum or even frank bleeding. It was owing to this serious stage that the problems engaged the attention of the Specialist Physician, Prof. Chukuedu Nwokolo,^{2, 3} who was based at the Enugu General Hospital.

Hospital consultancy and his wide reputation as a clinician facilitated Nwokolo's contact with crowds of satisfied patients. Consequently, this was what enabled him to recognize the difference between (a) the few paragonimus patients whom he had seen personally prewar and (b) the postwar epidemic throng. Interestingly,

laboratory investigation of the sputum was revealing the presence not of the expected tuberculosis germs but of the specially shaped paragonimus eggs.

Eggs endowed with this particular shape abounded and were being documented more thoroughly than in the early days of Yarwood and Elmes.⁴ In their own reported case, an abscess presented in the neck of a 23-year-old man. In their own words, "A careful search failed to reveal any adult worms." Indeed, worms were earnestly sought in 1972 by the puzzled Professor who readily sought my help when I was the Specialist Pathologist in charge of the Eastern Nigerian Regional Laboratory based at Enugu. Indeed, he himself told me to be on the lookout for the hitherto hidden causative adult worms.

Worms being sought for scientifically in this manner were to surface in the fullness of time. Thus, on 27/8/72, Dr Festus Nwako, a Specialist Paediatric Surgeon at the University Teaching Hospital, Enugu, operated on an Igbo girl aged 8 years. She had lived in the Okigwe area and was thereafter suffering from a lump in her abdominal wall. It was removed and submitted to me with a well filled Request Form in an adequate container partly filled with the requisite formalin fluid. The routine laboratory step of cutting into the girl's specimen revealed the presence of paragonimus eggs. Therefore, what of the worms proper? In this context, Dr. J. Voelker, a German worm specialist, was doing research with Professor Nwokolo. Accordingly, by way of precaution, I gave him one half of the specimen so as to investigate it with a special microscope on 20/2/73. He found no worm. Nor did any worm come to light when the remaining half was handed over on 22/2/73. Meanwhile, the serendipity aspect manifested. Thus, I had the hunch that these worms might have gravitated into the fluid inside the hitherto well kept container. Consequently, I directed Mr. Edward Maduko, my Senior Laboratory Technician, to be careful as follows: (a) to retrieve the container stored since 6 months, (b) to spin its contents, (c) to obtain the residue, (d) to prepare what is called a wax block, and (e) to submit the usual microscope slide.

Slide of slides was expertly examined by me on 26th February, 1973. It was this priceless slide that revealed the two incriminated adult worms! Hence, in this most masterly manner, I became the World's discoverer of these wondrous worms. Subsequently, the story of the discovery was co-authored with Surgeon Nwako and published in the 1974 September Issue of the bilingual English-German Journal called *Tropenmedizin und Parasitologie*.⁵ In sum, the terse title was "Discovery of Adult Parasites of *Paragonimus uterobilateralis* in Human Tissue in Nigeria".

Nigeria in this way came into prominence as regards the pathogenesis of this particular worm disease. However, this came fully to light after the war had ended. Nevertheless, there must have been some undercurrents which prevailed during the war itself and even immediately afterwards. Indeed, the disease came to be recognized as the iceberg that consisted of both wickedly planned and deadly executed malnutrition. Thus, Prof. Nwokolo,⁶ who knew of only very few prewar sufferers of paragonimiasis, treated a deluge of 100 cases at Enugu within the 10 months period from November, 1970 to August, 1971. Incidentally, he treated them successfully

with the drug, Bithionol,⁷ and acknowledged its generous supply from the Center for Disease Control, Atlanta, Georgia, U.S.A. and the U.S.A.I.D. Tuberculosis Program.

Program of such international assistance was one important and noteworthy aspect of the Nigerian Civil War. However, it covered a mere fraction of the populace, namely, the lucky victims who were treated successfully at Enugu. What of the rest of the exposed population who were also at risk? This means that the very well-known deaths due to kwashiorkor did not constitute the whole picture. In other words, other unknown deaths must have occurred on account of paragonimiasis! Be that as it may, it should be borne in mind that the genesis of this worm disease was grimly grounded on that strict starvation strategy that the world acclaimed Chinua Achebe⁸ expatiated on both passionately and graphically

Graphically analysed was the occurrence of kwashiorkor not only in children but also in the adult members of my own kindred, the Isiekes, who had fled, as I did, to our hometown, Oraifite. Incidentally, but for Obosi indigenes, who stoically stood their ground, we too would have faced the fighting itself. Interestingly, out of a population of 473 persons, I was able to document the attendant deaths. In fact, as many as 18 (3.9 %) adults died from kwashiorkor while natural deaths accounted for only 9 (1.9 %) of the people.

People, who survived the war, still face paragonimiasis which continues to smolder as Udonsi⁹ detected in the Upper Igwun Basin. In his own words, "In recent times there has been a shortage of protein foods, with increasing high costs of meat in most parts of rural southern Nigeria. This situation arose with the current economic situation and 'austerity'. Rural inhabitants have therefore intensified their hunts for lower animal forms as protein supplements".

Supplements should, be it noted, be chosen properly whenever this type of situation arises. In this context, it is noteworthy that, in terms of future directions, "combined measures including mass survey, mass treatment and health education have been found to be effective in the control of paragonimiasis in China."¹⁰ This is worthy of note.

Discussion:

Note that patients presenting with fever and cough, when coupled with hemoptysis, are prone to be misdiagnosed as tuberculosis.^{11, 12} Therefore, awareness of the possibility of the underlying lesion being due to paragonimiasis is desirable.

Desirable developments ought to follow the executed plans of good Governments. For instance, bitter bickerings among politicians should give way. Better still, let them argue about funding researches for the accelerated understanding of the pathogenesis of important remediable diseases.

Conclusion:

Well planned public health policies are very important. For example, they can ameliorate the ominous manifestations of both malnutrition and parasitic diseases, especially in civil war situations. In this context, if all goes well among mankind, peace can so prevail that wars will be prevented worldwide, particularly in

the Developing Countries.

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