

Tribute to Denis Burkitt

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The medical and scientific community was diminished on 23 March 1993 by the death of Denis Burkitt CMG MD DSc FRS FRCS. Denis, as he was known to his friends, was undoubtedly one of the great physicians of the twentieth century. He had not only a tremendous ability to turn simple observations into major scientific discoveries but was genuinely humble over these achievements. In light of this he can be held up as a perfect role model as a physician and scientist.

Unpromising beginnings

Denis Burkitt was born on 28 February 1911 in Enniskillen, in what is now Northern Ireland. He graduated from Trinity College, Dublin, in 1935. His university career gave not an inkling of his abilities¹. Burkitt entered university with no sense of vocation. He first drifted into engineering. At that time a tutor wrote a letter to his father in which he expressed grave doubts as to whether Burkitt would ever be able to obtain a degree. Ironically, precisely half a century later, in 1979, the university awarded him their most distinguished accolade, an Honorary Fellowship.

Personal recollections – Cliff Nelson

My acquaintance with Denis Burkitt goes back to 1958, when we first met in the old British Colonial Service in Uganda. By his own description he was just an obscure hack surgeon seconded to Uganda. His genuine humility, outstanding Christian character, generosity, and deep interest in the welfare of others were apparent then. Nor did they change over the years, despite fame and some fortune.

I well remember my first day in Uganda when I had tea at Denis' house with him, his wife Olive and their three daughters, Judith, Cass and Rachel. Denis made reference to a mysterious jaw tumour (Figure 1). On his surgical safaris once or twice a year to "Big Daddy" Idi Amin's home district,



Figure 1. Child with Burkitt's lymphoma. (Courtesy Mrs Olive Burkitt.)

where I was posted with my wife Beth, he kept me up-to-date on his hypothesis, and enlisted me in his army of doctors all over Africa reporting to him. In 1961 Denis, Dr Ted Williams, a mutual friend, and I journeyed 10,000 miles in 10 weeks, visiting 63 hospitals in nine sub-Saharan countries. The trip virtually nailed down the geographic distribution of Burkitt's lymphoma (Figure 2) and soon propelled Denis to fame. His paper became a classic of cancer research², as the tumour was the first demonstrated to have a viral origin; it is caused by the Epstein-Barr virus. This unique safari showed Denis' sterling qualities at close quarters, one of the most memorable being his valiant efforts to give credit to others. He really tried hard to avoid having the tumour named

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Figure 2. Denis Burkitt in his office in Kampala, Uganda, in 1962 beside a map showing the distribution of Burkitt's lymphoma as demonstrated by his research. (Courtesy Dr Ralph Blocksma.)

after him. Essentially, I was just along as the laundry boy and Ted was the driver/mechanic, but in Denis' eyes it was a team of equals. Never did Denis' true humility shine through better.

The trip was done on a shoestring budget, which Denis made light of daily. Indeed, the research grant for the project was a mere £25. "Of course, we'll have the hotel room without the bath. For a quid or two it's a cinch to walk down the hall." Or, "Is a box of biscuits and a cup of tea in the car while we're travelling okay with you two again today instead of a fancy, expensive lunch?" His humour kept our spirits buoyed up as well. We'll never forget statements such as, "This must be the safest ever safari in Africa. Here we are three doctors, each with our private stock of medicines making a beeline from one hospital to the next". Ted, after looking over countless giant anthills, asked, "I wonder how many anthills there are in Africa?" "Easy," shot back Denis, "count the ants and divide by 50,000".

In 1966 Denis left for a position with the Medical Research Council in London. Visiting him there in 1968 I asked about the latest on Burkitt's lymphoma. "Okay Cliff", he replied, "it's all out of my hands now. All the really clever chaps in epidemiology, virology, immunology and biochemistry have left me in the dust". Then with a gleam in his eye he said, "But I think I've found something else that may be more important - fibre in the diet; it's the forgotten factor". Instinctively, I knew that Denis was off again on something that everyone else had missed.

Denis is dead, but the legacy of what this great man of outstanding Christian character and



Figure 3. Denis with a group of children with Burkitt's lymphoma. (Courtesy Mrs Olive Burkitt.)

exemplary humility leaves behind is immense. It is not just his scientific achievements, but what he taught us about the stuff of life: how to live, how to die, and the truth of life after life.

Western diseases and dietary fibre

In the late 1960s and early 1970s Denis Burkitt played a major role in developing two closely related concepts: the concept of Western disease and the importance of dietary fibre.

Despite the large numbers of doctors from Britain and other Western countries who had worked in Third World countries, very little had been written about the enormous differences in patterns of disease between the two types of country. Burkitt was not the sort of person to fail both to notice and to be intrigued by these contrasts. In his usual energetic and methodical way, he set to work to gather reliable data. Fortunately, his position and reputation greatly facilitated this. By means of questionnaires he obtained information on disease incidence from nearly a thousand rural hospitals in the Third World. This provided convincing evidence that many of the commonest non-infective diseases present in Western countries are rare or even unknown in populations still living a traditional lifestyle. This leaves no doubt that these diseases – now known as Western diseases – must therefore be caused by lifestyle factors.

Simultaneous with this discovery Burkitt helped to establish the importance of dietary fibre. As with the work on Western disease, the concept built on the ideas of Dr T L Cleave, and was done in collaboration with Dr Hugh Trowell. The brainstorming that gave birth to these concepts was facilitated by the fact that the three key people involved all happened to be in the same place at the same time – in this case southern England. However, it is Burkitt who was most responsible for persuading the medical and scientific community that these concepts are based on hard evidence.

In Uganda Burkitt had made the important observation that Africans produce several times more faeces than do Westernized people. Moreover, this faeces is soft and is produced with negligible discomfort – again in marked contrast to Westernized people. Burkitt hypothesized that a major cause of Western disease is the consumption of refined carbohydrates with its low content of dietary fibre. This concept led to our understanding of the role of dietary fibre in such conditions as type II diabetes, obesity and diverticular disease, and to the realization of the effectiveness of soluble fibre as a hypocholesterolaemic agent. Of great importance was Burkitt's hypothesis that dietary fibre plays a major role in protection against colonic cancer³. This paper became Burkitt's second citation classic.

In recent years Burkitt turned his energies to preventive medicine. He realized that not only are the Western diseases preventable but also that medicine has had relatively little success in finding



Figure 4. Denis Burkitt. (Courtesy Mrs Olive Burkitt.)

effective new cures. He summarized his argument in the words: "Better to build a fence at the top of the cliff than park ambulances at the bottom". Over the last several years he travelled widely, giving press interviews and addressing meetings on this theme. In the months before his death, at the age of 81, he was in Canada and the USA continuing this work. With one of us (NT) he recently co-authored two papers^{4,5} and co-edited a book⁶ which developed his viewpoint on Western disease and the challenge facing medicine. Typically, he insisted that his name appear second in each of these publications.

Denis Burkitt was highly honoured for his work. He received the Gold Medal of the British Medical Association. In January 1993 he received the 1992 Bower Award and Prize for Achievement in Science, presented by the Franklin Institute in Philadelphia. This is the most prestigious award in North America. In a letter to one of us (NT) he said, "I could think of no valid reason why I should have been the recipient". No-one who knew him would accuse him of false modesty.

Envoi

Though very intelligent, Denis did not have an overwhelmingly superior intellect. What he did have was a penetrating insight into problems that fluffed away the chaff and went for the kernel. Coupled with this was his amazing ability to garner knowledge from others. People from all scientific disciplines and walks of life enthusiastically shared their storehouses of knowledge, experience and ideas. He got people to brainstorm and then

gathered the kernels to knead, mould and cook them into a loaf of truth. Denis' contributions were a true accretion of the work of many others, but he was maestro bringing it all together.

His achievements were perfectly summarized by the Royal College of Physicians and Surgeons of Canada in 1992 when they awarded him an Honorary Fellowship:

"Dr Burkitt is one of the best known surgeons today. What has made him famous is his remarkable ability to observe disease patterns around him, to identify their peculiarities and to develop concepts and hypotheses. Like many surgeons, Dr Burkitt is rarely in doubt about his convictions on medical matters, but unlike the rest of us he consistently turns out to be correct.

Denis Burkitt supported the theory that many of the diseases that are widespread in Western countries but are absent in the Third World, including appendicitis, diverticulitis, diabetes, heart disease and certain cancers, are due to the way we eat. On the basis of his convictions, he has launched a worldwide crusade to increase our consumption of vegetable fibers.

It is impossible to grasp the number of lives that have been improved or saved and will continue to be improved as a result

of Dr Burkitt's epidemiological acumen and his missionary zeal when promoting our health."

Denis Burkitt is survived by his wife Olive, their three daughters and their grandchildren.

References

- 1 Burkitt D. Unpromising beginnings. *J Irish Coll Physicians Surg* 1993;22:36-8
- 2 Burkitt D. A sarcoma involving the jaws of African children. *Br J Surg* 1958;46:218-23
- 3 Burkitt DP. Epidemiology of cancer of the colon and rectum. *Cancer* 1971;28:3-13
- 4 Temple NJ, Burkitt DP. The war on cancer: failure of therapy and research. *J R Soc Med* 1991;84:95-8
- 5 Temple NJ, Burkitt DP. Towards a new system of health: the challenge of Western disease. *J Community Health* 1993; 18:37-47
- 6 Temple NJ, Burkitt DP. *Western diseases: their dietary prevention and reversibility*. Totowa, New Jersey: Humana Press 1994