

A newly described tumour: Burkitt's sarcoma

Fifty years ago, in the November issue of the *British Journal of Surgery* for 1958, a short, five and a half page, nicely written and well-illustrated paper was published entitled 'A sarcoma involving the jaws in African children'. It originated from the Department of Surgery of the Makerere Medical School in Kampala, Uganda and its sole author was a medical officer in the Colonial Medical Service, Denis Parkins Burkitt. At the time, this paper aroused very little interest; today it is one of the most commonly quoted articles on cancer epidemiology.

Burkitt described 38 patients who he had studied over a 7-year period; 32 at Mulago and six at various district hospitals. A further eight children were not included because of a lack of histological material from their tumours. The children's ages ranged from 2 to 14 years. The maxilla, mandible, or, in eight cases, both, and in six of these, all four quadrants, were involved, the tumour grew rapidly, with early involvement of the orbit in the maxillary lesions. The regional lymph nodes were not involved unless there was secondary infection of the tumour.

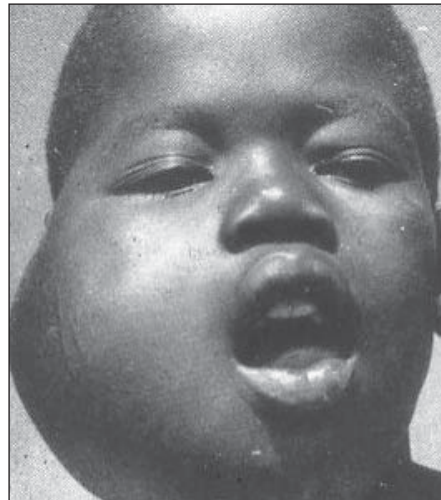
The disease was rapidly progressive – radiotherapy at that time was unavailable in Uganda – and at autopsy there were widespread deposits of tumour, especially in the suprarenal glands, kidneys and liver. The spleen and lymph nodes were not implicated in the disease process. Only three similar cases of this type could be traced in previous publications (*Figure 1*).

Microscopy showed a highly malignant tumour of cells of variable size with a large nucleus and often two nucleoli, and with a scanty, mainly eosinophilic, cytoplasm. (Later studies described a typical 'starry sky' pattern imparted by infiltrating benign macrophages that had ingested apoptotic tumour cells.) At this stage no suggestion could be made with regard to aetiology. However, Burkitt went on to perform ground-breaking epidemiological studies across equatorial Africa. He was

able to show concurrence of the distribution of this tumour with that of the anopheles mosquito and with malaria and to suggest the tumour was related to failure of immune surveillance. He was always proud of the fact that all this research was carried out at the cost of a few hundred pounds – an MRC grant for travel expenses. He also liked to point out that Sir Richard Doll's classical initial study on the relationship of cigarette smoking and lung cancer was completely funded by a grant of £650 – the cost of a part-time secretary for 6 months.

Later studies showed that the Epstein-Barr virus (EBV) genome could be demonstrated in most of the African patients. With the spread of HIV infection, cases of Burkitt's sarcoma were soon to be reported in AIDS patients throughout the world,

Figure 1. An African child with Burkitt's sarcoma involving the right maxilla and mandible.



and in these cases the EBV genome was demonstrated in between 25 and 40% of cases. Interestingly, these AIDS-related patients showed a different distribution of the disease, with particular involvement of the distal ileum, caecum, kidneys and, in the female, the ovaries.

Today, treatment with modern cytotoxic drugs can achieve rapid regression of these tumour masses with long-term survival in a proportion of cases.

Denis Burkitt was born in Northern Ireland in 1911, qualified in Medicine at Trinity College, Dublin and joined the Colonial Medical Service during the Second World War, serving in Uganda until 1964. He then returned to England and pursued his epidemiological interests in other fields. He pointed out the frequency of diverticulosis in the western world in contrast to its rarity in Africa, and correlated this with the high roughage diet (and rapid intestinal transit times) of the African village dwellers compared with English town-dwellers. He also postulated a relationship between a low fibre diet and large bowel cancer.

Burkitt was appointed a CMG (Companion of St Michael and St George) in 1970 and was elected FRS (Fellow of the Royal Society) 2 years later. He was a charming, diffident, deeply religious man and both a brilliant and an amusing lecturer. He died in 1993. [BJHM](#)

Conflict of interest: none.

Burkitt DP (1958) A sarcoma involving the jaws in African children. *Br J Surg* 197: 218–23

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