

This Week's Citation Classic

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Burkitt D. A sarcoma involving the jaws in African children. *Brit. J. Surg.* 46:218-23, 1958.

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This was the first paper in which malignant tumours occurring in different parts of the body were recognised to be part of a single clinical syndrome. Emphasis was placed on the jaw lesions, the clinical, radiological, and histological features of which were described. [The *SCI*[®] indicates that this paper has been cited in over 310 publications since 1961.]

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"My interest was first roused by recognising that lesions occurring in the jaws of children, which had previously been considered to be primary tumours limited to the jaws, were almost if not invariably associated with tumours in other parts of the body. These tumours had not only a characteristic anatomical distribution, occurring commonly in the jaws, orbit, kidneys, adrenals, ovaries, testicles, and long bones, but also shared a common age distribution; a characteristic feature was the rarity of peripheral lymph node involvement.

"Previously, they had been histologically classified according to the site of the presenting lesion. When this was in the orbit, the tumour was a retinoblastoma; when in the kidneys or adrenals, a neuroblastoma; when in the long bones, a Wilm's tumour; and so on, all small-round-cell tumours. The tendency for these tumours to occur in the same patients and to share the same age distribution, and, as discovered subsequently, to have the same geographical distribution convinced me that they must all be part and parcel of the same tumour process. Not only was this confirmed initially by Davies and

O'Connor,¹ who identified these tumours as a form of lymphoma, but subsequently Wright² demonstrated how they could be distinguished, mainly on cytological criteria, from other forms of lymphoma. All the results of a common cause tend to occur in association with one another, and conversely, the recognition of an association between results, in this case diseases, suggested a common cause. It was precisely this line of argument that led to my other *Citation Classic*³ on large-bowel cancer, which shares its pattern of geographical and socioeconomic distribution with that of other characteristically Western diseases.

"Soon after a recognisable clinical syndrome had been established, it became apparent that the tumour was common only in certain parts of Africa. A detailed study of the distribution of the disease in Africa initially revealed a belt across Africa lying for the most part between 10° N and 10° S of the equator. Later it was shown that the tumour only occurred in moist, warm areas.

"These observations led to the hypothesis that some insect vector might be implicated, and this in turn led to the discovery of the Epstein-Barr virus.⁴

"Some lessons to be learned were: 1. Dollars cannot be turned into ideas though the reverse can occur. My total research grants for my first 18 months that delineated the lymphoma belt amounted to £75 (under \$150). 2. There is still a place for research in the absence of expensive equipment. 3. There is value in friendly cooperation with those of totally different abilities, background, and outlook.

"The reason why this publication has been cited so often is that it was the first description of the tumour that eventually became known as Burkitt's lymphoma. Moreover, it was in material from this tumour that the famous Epstein-Barr virus was isolated. My colleagues and I helped to construct the pad from which the Epstein-Barr virus rocket was launched. Epstein and his colleagues were dependent on my work to get off the ground. Our efforts would have been largely sterile without their intervention."

1. O'Connor G T & Davies J N P. Malignant tumors in African children, with special reference to malignant lymphoma. *J Pediatrics* 56:526-35. 1960.

2. Wright D H. Cytology and histochemistry of the Burkitt's lymphoma. *Brit. J. Cancer* 17:50-5, 1963.

3. Burkitt D P. Epidemiology of cancer of the colon and rectum. *Cancer* 28:3-13, 1971.

[Citation Classic. *Current Contents/Clinical Practice* 9(12):20, 23 March 1981.]

4. Epstein M A, Achong B G & Barr Y M. Virus particles in cultured lymphoblasts from Burkitt's lymphoma. *Lancet* 1:702-3, 1964. [Citation Classic. *Current Contents/Life Sciences* 22(14): 10, 2 April 1979.]