The changing pattern of pathology in black South Africans

C Isaacson

This article is part of a Festschrift honouring Professor H Koornhof on his 80th birthday.

My colleague and friend of over 40 years, a truly great man. An internationally recognised microbiologist, accorded great honours. A humanitarian, acutely sensitive to any suggestion of discrimination. I remember at one of the meetings of Heads of Departments which the then Director, Professor J Metz, regularly used to call, Hendrik enquired as to why white employees receive white payslips and black employees yellow payslips. This typified his caring and sensitivity. Hendrik, I consider it a privilege to have been your colleague for many years. I salute you.

With increasing urbanisation and westernisation of the black people of South Africa, an alteration in the distribution of various diseases is silently taking place. Some changes accelerated after transformation in 1994.

Cardiovascular disease

Myocardial infarction

Changes in incidence were already demonstrated over 30 years ago when it was shown that in 1959 and 1960 only one case of myocardial infarction was found at autopsy at Baragwanath Hospital (0.13% of all autopsies in each year), whereas in 1976 there were 14 cases (2% of all autopsies).[1,2] Since 1977 no new data have been produced. Clinicians maintain that myocardial infarction is now a common clinical entity and is top of the differential diagnosis in adult males presenting with chest pain. The clinical presentation and survival of such patients should be documented.

Cardiomyopathy

Cardiomyopathy is also called cryptogenic heart disease and now designated dilated cardiomyopathy. An autopsy study in 1959 showed that cardiomyopathy constituted 33% of all cardiac deaths.[3] By 1976 this had fallen to 14.1%.[2] Clinicians claim that the incidence has fallen even further. Surely this requires intensive study. It would be of interest to review old histological material using modern laboratory techniques in an attempt to unravel this strange illness.

Emeritus Professor of Pathology, University of the Witwatersrand Medical School, and National Health Laboratory Service, Johannesburg
C Isaacson, MD, FRCPath, Dip Clin Path, DPath

Corresponding author: *C Isaacson (charlesi@worldonline.co.za)*

Rheumatic heart disease

In 1958 it was shown that rheumatic heart disease accounted for 23% of heart disease cases admitted to one of the medical wards at Baragwanath Hospital.[4] It was second in frequency only to cryptogenic (dilated) cardiomyopathy. Higginson *et al.*[3] stated that rheumatic heart disease accounted for 32% of all cardiac deaths and was therefore the commonest cardiac disease at autopsy. In a later series,[1] it was the second commonest cardiac death at autopsy after hypertension. No current data are available. Clinicians state that rheumatic heart disease is much less frequent with particular reference to the major complications such as bacterial endocarditis. The role of improved socio-economic circumstances and antibiotic therapy should be studied.

Hypertension

Many studies have shown that hypertension in the black population of South Africa is common and severe.[5] It occurs at a younger age than in whites and presents in an explosive manner with death occurring mainly from uraemia, cerebral haemorrhage or infarction, and congestive cardiac failure.[6] The majority of black South African hypertensive subjects have essential hypertension, and a considerable proportion of the latter develop the malignant phase of the disease. The current focus is on the role of cations, renin-angiotensin-aldosterone research and molecular genetic studies.[7]

Cancer epidemiology

Carcinoma of the breast

Several authors have described a low frequency of breast cancer in the blacks of South Africa.[8] Isaacson[2] reported an incidence rate of 6/100 000 per annum for all ages, compared with 74/100 000 for California blacks. Walker *et al.*[9] reported a recent rise to 15/100 000 in an urban population. There are no current data. Clinicians claim that carcinoma of the female breast is now common. It would be of immense value to study the histological sections from an earlier period (1955 - 1964) to compare with a later span (1995 - 2004). Incidence rates, immunoperoxidase and DNA studies may cast light on possible aetiological factors and whether there is a true increase in the incidence of the tumour.

Carcinoma of the prostate

A study of the years 1966 - 1975 showed a low incidence of 4.5/100 000 per annum compared with 52/100 000 in California blacks.[2] In the years following that survey there was a marked increase in the incidence of prostatic carcinoma, the number of

cases almost doubling compared with the previous 10 years. The cause of this was uncertain and no specific dietary or other environmental factor could be incriminated.

No current data are available. Clinicians and pathologists claim that carcinoma of the prostate is common. Incidence rates should show if there is a true increase in incidence. Histological, histochemical and DNA studies may show interesting differences between cases seen in 1955 - 1964 and those diagnosed in 1995 - 2004.

Squamous carcinoma of the oesophagus

The incidence of squamous carcinoma of the oesophagus shows remarkable changes.[2] The tumour was virtually unknown in the early 20th century. It reached a peak in the 1960s,[8] and then showed a gradual decline. The 10-year survey 1966 - 1975[2] yielded an average annual incidence of 24 and 4/100 000 for males and females respectively (male/female ratio 5:1), compared with 12 and 4/100 000 for California blacks. Current data are not available, but clinicians and pathologists insist that there has been a significant drop in incidence. The change of the staple diet of black South Africans from sorghum to maize (corn) may be a factor in the aetiology.[10] The decline in incidence of oesophageal carcinoma may be due to the preference for Western-type beer over traditional beverages. Patients with oesophageal cancer consume more traditional beer than controls. A search for carcinogenic nitrosamines in traditional beer may produce interesting results.

Squamous carcinoma of the cervix

Carcinoma of the cervix is the commonest malignant tumour in black females, with an average annual incidence of 19/100 000.[2] The tumour is not infrequently diagnosed in the 3rd decade, although the peak incidence is in the 5th decade. With the current epidemic of HIV infection the situation has deteriorated dramatically. Current data are not available. Nevertheless, it is apparent that the incidence has risen considerably with infiltrating tumours occurring in young women in their early 20s. A demographic study including the role of papillomavirus from two different periods, 1955 - 1964 and 1995 - 2004, would be very valuable.

Hepatocellular carcinoma

The 3-year survey in the 1950s[8] revealed 53 cases of oesophageal cancer and 114 of hepatocellular carcinoma. Subsequently the ratio was reversed, and in 1960 the records of the Histopathology Laboratory at Baragwanath Hospital yielded 87 oesophageal carcinomas and 22 hepatocellular carcinomas. The 10-year study 1966 - 1975[2] yielded 6 cases per 100 000 per annum with a male/female ratio of 5.5:1. Clinicians and pathologists claim a marked decrease in the incidence of the tumour. The aetiological importance of hepatitis B virus infection in hepatocellular carcinoma has been unequivocally demonstrated.[11] As the vaccine has only recently been introduced, it is unlikely to have had any effect on the incidence of the tumour. What are currently the major aetiological factors?

Cutaneous malignant melanoma

Does the sun play a major role in the aetiology of cutaneous malignant melanoma?[12]

There has not been a change in the incidence of malignant melanoma in black people, and this section merely accentuates the observation that the majority of cutaneous malignant melanomas in black people occur on the sole of the foot, a hypopigmented area where the sun clearly plays no role. It would be of value to determine the nature of the melanin – eumelanin or phaeomelanin – on the soles of the feet, compared with the rest of the body. An interesting paradox is present in this country. South African albinos are tyrosinase positive, produce phaeomelanin only, and have no protection against the oncogenic effect of ultraviolet light. Melanoma is however rare in albinos, although squamous and basal cell carcinomas are very common. Is this not a strong indication that the sun plays little role in the aetiology of cutaneous malignant melanoma?

Liver disease

Before 1962, South African blacks were not permitted access to the usual sources of alcohol, and drank home-brewed beer prepared in rusting metallic containers.[13] This alcohol contains large quantities of iron and its consumption produces haemosiderosis. Iron overload produces a micronodular cirrhosis characterised by an absence of fatty change, alcoholic hepatitis, alcoholic hyaline or alcoholic cirrhosis, in contrast to the picture seen in Western societies. In 1962 the liquor laws were liberalised, producing a dramatic change in liver pathology with the advent of typical alcoholic cirrhosis.[13] No current data are available, but alcoholic liver disease is probably the most important medico-social disease in the black population. A comparative analysis of liver biopsies for the years 1955 - 1964 and 1995 - 2004 may well yield valuable information.

Dietary iron overload

The high prevalence of dietary iron overload in South African blacks is derived from the iron containers used for the preparation of traditional beer. There has been a reduction in the prevalence and severity of iron overload in urban black South Africans over the last 50 years,[14] ascribed to radical changes in drinking habits.[2] Commercial breweries are now a major source of fermented alcohol drinks and very little is brewed in the home. When beer is produced in the home it is

usually prepared in plastic containers and not in the traditional iron drums. The most significant change in the drinking habits of the urban black population is a marked increase in the consumption of the 'white man's liquor', with a corresponding decrease in the consumption of home-brewed traditional beers.

Conclusion

Researching and documenting the changing pattern of pathology in black South Africans is a responsibility that demands urgent attention. Failure to do so will constitute loss of a unique opportunity that will never present itself again.

References

1. Isaacson C. The changing pattern of heart disease in South African blacks. *S Afr Med J* 1977; 52: 793-798.
2. Isaacson C. *Pathology of a Black African Population: Current Topics in Pathology*. Berlin: Springer-Verlag, 1982.
3. Higginson J, Isaacson C, Simson I. The pathology of cryptogenic heart disease. *Arch Pathol* 1960; 70: 947-507.
4. Schwartz MB, Schamroth L, Seftel HC. The pattern of heart disease in the urbanised 'Johannesburg' African. *Med Proc* 1958; 4: 275-281.
5. Isaacson C, Kincaid-Smith P. Study of the kidney in the Bantu with hypertension. *Br Heart J* 1962; 24: 372-374.
6. Isaacson C, Milne FJ, van Niekerk I, Kenyon MR, Mzamane DVA. The renal histopathology of essential malignant hypertension in black South Africans. *S Afr Med J* 1991; 80: 173-176.
7. Milne FJ. Arthur Landau Lecture 2003. *Transactions of the College of Medicine of South Africa* 2003.
8. Higginson J, Oettle AG. Cancer incidence in the Bantu and 'Cape coloured' races of South Africa: Report of a cancer survey in the Transvaal (1953-1955). *J Natl Cancer Inst* 1960; 24: 589-671.
9. Walker ARP, Adam FI, Walker BF. Breast cancer in black African women; a changing situation. *J R Soc Health* 2004; 124: 81-85.
10. Isaacson C. The change of the staple diet of black South Africans from sorghum to maize (corn) is the cause of the epidemic of squamous carcinoma of the oesophagus. *Med Hypotheses* 2005; 64: 658-660.
11. Kew MC. Hepatitis B and C viruses and hepatocellular carcinoma. *Clin Lab Med* 1996; 16: 395-406.
12. Isaacson C, Ramsay M. Does the sun play a role in the aetiology of malignant melanoma? A review. *S Afr Med J* 2007; 97: 568-571.
13. Isaacson C. The changing pattern of liver disease in South African blacks. *S Afr Med J* 1978; 53: 365-368.
14. MacPhail AP, Simon MO, Torrance JD, Bothwell TH, Isaacson C. Changing pattern of dietary iron overload in Black South Africans. *Am J Clin Nutr* 1979; 32: 1272-1278.