Ten-year observation of peptic ulceration at Ga-Rankuwa Hospital, Pretoria — 1979 - 1988

C. F. VAN DER MERWE, W. TE WINKEL

Summary

For the 10-year period 1979-1988, the incidence of endoscopically diagnosed peptic ulceration at Ga-Rankuwa Hospital was studied with particular reference to: type of ulcer; age, sex and place of residence of the patients; and patient's occupations. The incidence of peptic ulceration remained unchanged. In this area, gastric ulceration is a rare disease among black people. Early urbanisation had no influence on incidence but more patients from developing rural areas were seen as the study progressed. There was a peak incidence during August.

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In a South African Medical Research Council progress report by Tovey and Turnstall[1] in 1975, attention was drawn to the fact that peptic ulceration (PU) in Africa differs in many ways from the condition in the UK. High- and low-incidence areas were described and the authors said that the low incidence of duodenal ulcers (DU) in rural Africa resembled the position in India, and differed from that in African cities and in Western countries.

Many studies on PU in South African blacks have been reported in the last 25 years. Ironically, studies of the disease in whites in the RSA are almost non-existent and outdated. Kark[2] provided some information for Durban whites in 1961 and Du Plessis *et al.*[3] for whites in Johannesburg in 1965. We presented a paper at the MASA Centennial Congress in 1983 comparing Kalafong and Ga-Rankuwa Hospitals with H. F. Verwoerd Hospital with regard to the epidemiology of peptic ulcers.[4] Included were figures from two private gastro-enterological practices in Pretoria.

An editorial in the *SAMJ* in April 1978[5] stated that: 'There is a general impression that the incidence of DU is much more common among urban black patients than it used to be'. In November 1983 Segal *et al.*[6] reported that: 'DU is being observed with increasing frequency in the black population of South Africa; this increase occurring *pari passu* with industrialisation'. Gastric ulcer (GU) was reported[6] as still uncommon in urban blacks. In 1979 Robbs and Moshal[7] reported a 12-fold increase in DU from 1950 to 1976 in Durban blacks. Part of this increase, however, may have been due to the increasing availability of endoscopy over this period. This contrasts with an observation in *Gut*[8] in 1986 that: 'The incidence and virulence of DU disease in whites has been declining for the past few decades'.

The present study was initiated in 1979 at Ga-Rankuwa Hospital and was prompted by the article by Segal *et al.*[9] on 'DU and working-class mobility in an African population in South Africa'. We have now covered a period of 10 consecutive years at the Medical University of Southern Africa.

Division of Gastro-enterology, Department of Medicine, Medical University of Southern Africa and Ga-Rankuwa Hospital, Pretoria
C. F. VAN DER MERWE, M.SC., ARTSEXAMEN NEDERLAND, M.D. (GRONINGEN)
W. TE WINKEL, ARTSEXAMEN NEDERLAND

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Patients and methods

Ga-Rankuwa Hospital acts as a local hospital, but is also the main referral hospital for north-west and northern Transvaal and Venda as well as the eastern Transvaal. It serves a population of 5 million. The study covers the period 1 January 1979 - 31 December 1988 and reports on in- and outpatients seen at Ga-Rankuwa Hospital.

All patients had an endoscopic diagnosis of PU. The minimum accepted ulcer size for entry into this study was 3 mm. Prepyloric ulcers were considered to be duodenal in character and were counted as such. For purposes of the study, a patient was not re-counted when attending for re-examination by endoscope after treatment; an ulcer relapse was, however, included. The data obtained included: type of ulcer; sex; age; place of residence; vocation; and date of diagnosis.

Results

A total of 1 379 DU and 225 GU patients were seen during the period under study. In order to relate the number of ulcer patients to the total number of patients seen, the Segal index[9] was used and the number of ulcers was expressed as a percentage of all admissions to the Departments of Medicine and Surgery (Table I).

TABLE I. DU AND GU AS % OF ALL ADMISSIONS, DEPARTMENTS MEDICINE AND SURGERY

Year	DU	GU
1979	**1,32**	**0,20**
1980	**1,09**	**0,11**
1981	**0,97**	**0,13**
1982	**0,94**	**0,16**
1983	**1,43**	**0,29**
1984	**1,28**	**0,17**
1985	**1,36**	**0,27**
1986	**1,67 (1,86)***	**0,24 (0,46)***
1987	**1,28 (1,58)***	**0,28 (0,30)***
1988	**1,60 (2,19)***	**0,17 (0,18)***

* 'Corrected' figures, see text.

A comparison with results from other hospitals using the same index is shown in Table II. As can be seen, our figures are comparable with those of Kalafong Hospital but higher than those of Baragwanath Hospital.

The annual number of DUs and GUs seen and the ratio DU:GU is shown in Table III. This ratio remained between 4,6 and 9,6 in favour of DU throughout the study period. A comparative list of the ratio DU:GU reported elsewhere is shown in Table IV.

TABLE II. DU AS % OF ALL ADMISSIONS, DEPARTMENTS OF MEDICINE AND SURGERY

Hospital	Year	%
Baragwanath[8]	1976	0,45
Kalafong	1977	0,95
	1978	1,22
Ga-Rankuwa	1979	1,32

TABLE III. RATIO DU:GU AT THE MEDICAL UNIVERSITY OF SOUTHERN AFRICA

Year	Total	No. DU	No. GU	Ratio DU:GU
1979	418	55	9	6,1 : 1
1980	649	99	13	7,6 : 1
1981	704	106	21	5,0 : 1
1982	823	112	16	7,0 : 1
1983	1 122	156	32	4,9 : 1
1984	1 655	148	20	7,4 : 1
1985	1 547	172	34	5,1 : 1
1986	1 602	184	26	7,1 : 1
1987	1 584	155	34	4,6 : 1
1988	1 703	192	20	9,6 : 1

TABLE IV. RATIO DU:GU

Source	Year	Ratio DU:GU
King Edward[4]	1957	4,4 : 1
Sub-Saharan Africa[1]	1975	33,0 : 1
United Kingdom[1]	1975	2,0-3,0 : 1
Baragwanath[6]	1981-1982	3,1 : 1
H. F. Verwoerd[4]	1982	1,2 : 1*
Pretoria practices[4]	1982	2,2 : 1*
Ga-Rankuwa	1981-1982	5,0-7,0 : 1

* Whites.

The male : female ratio of DU and GU patients is shown in Table V. During the period of study, the ratio has remained constant. A comparison of male:female ratio with other South African hospitals is shown in Table VI.

TABLE V. MALE : FEMALE RATIO IN PU

Year	DU	GU
1979	2,4 : 1	2,0 : 1
1980	3,2 : 1	3,3 : 1
1981	2,2 : 1	1,3 : 1
1982	3,0 : 1	1,6 : 1
1983	3,0 : 1	1,6 : 1
1984	4,1 : 1	1,9 : 1
1985	2,5 : 1	1,1 : 1
1986	2,2 : 1	1,4 : 1
1987	3,1 : 1	1,1 : 1
1988	2,6 : 1	1,9 : 1

The mean age of our DU patients has not changed during the 10 years of observation (Table VII). A comparison of mean age with that in other institutions is shown in Table VIII. The number of cases with GU has remained low and the mean ages of these patients are therefore not reliable and are not given.

TABLE VI. MALE:FEMALE RATIO IN PU

Source	Year	DU	GU
King Edward VIII, Durban[2]	1950-1959	6,8:1	21:1
King Edward VIII, Durban[7]	1960-1962	2,5:1	—
King Edward VIII, Durban[7]	1972-1975	2,8:1	—
King Edward VIII, Durban[10]	1972-1979	2,5:1	—
King Edward VIII, Durban[10]	1972-1979	1,6:1*	—
Johannesburg General[3]	1965	1,2:1*	—
Johannesburg General[11]	1977	6,1:1	—
Baragwanath[6]	1982	2,1:1	1,1:1
H. F. Verwoerd[4]	1982	0,9:1	0,6:1*
Pretoria practices[4]	1982	1,1:1	1,0:1*
Ga-Rankuwa	1982	3,0:1	1,6:1
Ga-Rankuwa	1988	2,6:1	1,9:1

*Whites.

TABLE VII. MEAN AGE (YRS) OF PATIENTS WITH DU

Year	Men	Women
1979	31,0	32,8
1980	35,7	35,0
1981	35,8	31,4
1982	33,8	43,9
1983	34,5	41,3
1984	36,3	46,2
1985	39,7	42,4
1986	38,4	36,8
1987	37,6	43,3
1988	36,7	35,9

TABLE VIII. MEAN AGE (YRS) OF DU PATIENTS

Hospital	Year	Mean age
Johannesburg General[11]	1964-1971	36
King Edward VIII[10]	1972-1979	36,7 (men)
		50,6 (men*)
		40,2 (women)
		55,6 (women*)
Baragwanath[6]	1982	40
Ga-Rankuwa	1982	33,8 (men)
		43,9 (women)

*Whites.

The peak age for DU in men and women is shown in Table IX. The mean age for patients with GU is not given annually because of the small numbers in each year. We calculated the mean age of men and women with GU during 1987 because in this particular year one of the largest numbers of cases was seen. Mean age for men was 44,8 years and for women 49,7 years, a 5-year difference in age between the sexes with GU.

Table X compares peak age in DU patients in various South African hospitals.

The ratio of urban : rural dwellers was 5,9:1 in 1980 and had decreased to 3,2:1 in 1986.

The vocation of our patients was grouped into two categories, skilled (professional, technical, clerical and transport workers) and unskilled (service, production workers and the unemploy-

TABLE IX. PEAK AGE OF DU AT MEDUNSA

Year	Age (yrs) Men	Women
1979	31 - 35	ID*
1980	26 - 30	31 - 40
1981	26 - 30	26 - 30
1982	26 - 30	41 - 45
1983	26 - 30	36 - 40
1984	26 - 35	36 - 40
1985	21 - 35	36 - 40
1986	26 - 30	36 - 40
1987	26 - 35	26 - 30
1988	26 - 30	26 - 30

*ID = insufficient data.

TABLE X. PEAK AGE (YRS) IN DU

Source	Year	Peak age
King Edward VIII[12]	1955-57	30-39
Johannesburg General (white)[13]	1964-71	35-55*
Johannesburg General (black)[12]	1964-71	20-40
King Edward VIII[7]	1974-76	19-29
Baragwanath[6]	1982	40-49
H. F. Verwoerd[4]	1982	70-79*
Pretoria practices[4]	1982	40-49*
MEDUNSA	1982	26-30 (men)
		41-45 (women)

*Whites.

ed). The ratio of skilled : unskilled did not change during the study period except for 3 years (1982-1984), when it changed from 0,7:1 to 1,05:1.

The seasonal incidence in our area is shown in Fig. 1.

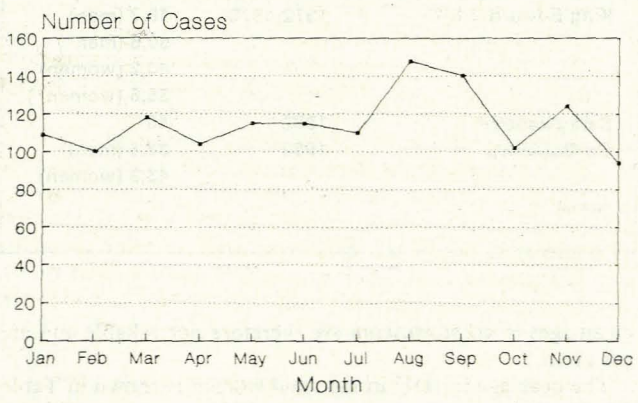

Fig. 1. Seasonal incidence of peptic ulceration at Ga-Rankuwa Hospital.

Discussion

The present study took 10 years and a total of 140 000 km and 3 395 hours of travelling to complete. Reviewing the annual figures for the variables studied allows certain conclusions to be drawn.

Annual incidence

Expressing the number of patients with PU as a percentage of the number of admissions to the hospital has certain disadvantages, but is often used. This study used the 'Segal index', which has its own disadvantages, but was applied to enable us to compare our figures with those of Segal *et al.*[9]

We are only aware of two other institutions — in Venda — that practise endoscopy in our area of drainage. Both these hospitals' endoscopists were trained by us and they started endoscopy in 1986. Taking into account that we have 'lost' some patients to these units, there was no appreciable increase in the incidence of either DU or GU in our unit during the 10 years of this study. The figures in parentheses in Table I give the 'corrected' percentages when the number of ulcers seen at Tshilidzini and Siloam Hospitals in Venda are included. There was no decrease evident as was suggested by *Gut*[8] for whites. We might be at the 'plateau situation' mentioned by Moshal *et al.*[10]

It would seem that PU occurs 3 - 33 times less in blacks than in whites in South Africa.[2,10] Our figures, being more or less similar to others from black hospitals, seem to corroborate this fact.

DU : GU ratio

This ratio is somewhat higher than the figure[6] from Baragwanath Hospital for 1981-1982. DU and GU recurrence in our population is uncommon, and is at present the subject of a study. The number of ulcers almost equalled the number of ulcer patients for each year. The fact that prepyloric ulcers are considered to be DU does not contribute much to the predominance of these ulcers over GU, for example, during the whole of 1987 only 7 and during 1988 only 13 prepyloric ulcers were diagnosed. As is evident from our figures and those from Baragwanath Hospital[6] and Durban,[2] GU is still a rare disease in blacks. In whites the ratio is 1-2:1 (Table IV).

Male : female ratio

Others have pointed out the predominance of DU in black men (Table VI). Our figures are similar to those found elsewhere. The male : female ratio in GU seen by us is much less and the ulcer occurs twice as often in men, as was found at Baragwanath Hospital.[6] In whites the occurrence by sex is equal in both DU and GU.

Mean age and peak age

The mean age of men with DU was 35,9 years and of women 38,9 years during the whole period of the study. This difference was also found in Durban[10] for both whites and blacks, where women were 4 - 5 years older. The figures also agree with those in Johannesburg.[6,11] Moshal *et al.*[10] found the mean age in blacks with DU to be 15 years younger than in whites during 1972-1979. The mean age of whites with DU at H. F. Verwoerd Hospital in 1982 was 60,1 years and in the white Pretoria private practices 45,5 years.

Patients attending H. F. Verwoerd Hospital are not representative of the population and the figure for their mean age is certainly too high. DU occurs approximately 7 years earlier in our patients than in whites seen in two Pretoria private practices.

It is evident that DU occurs 10 years earlier than GU in blacks and the age of onset in men and women differs by 5 years in both DU and GU (DU men 35,9 years, women 38,9 years, GU men 44,9 years, women 49,7 years). Segal *et al.*[6] found a 5-year difference (40 years for DU and 45,6 years for GU).

Peak age for DU and GU in our study did not show any significant changes throughout the 10 years (Table IX). Whether the lower figures for women in 1987 and 1988 is coincidental will become evident when the 1989 figures become available. As with mean age, there was a 10-year difference in the sexes with men showing a peak at 26 - 30 years and women at 36 - 40 years. Similar figures for DU have been found in Johannesburg by Cooke[11] in the 1966 - 1976 period and by Robbs *et al.*[7] in Durban for 1974 - 1976. Segal *et al.*[6] found the peak age to be 40 - 49 years for both GU and DU in Johannesburg for the period 1981 - 1982. This is a difference of approximately 7 years. However, the numbers in this study were small. The peak age for whites (Table X) seems to be around 45-50 years, a difference of about 12 years.

Urban : rural ratio

In 1980 urban patients with DU outnumbered rural patients 6:1. There was a gradual fall in the ratio to approximately 1:1 in 1988. Unfortunately, no figures for the population around us are available. A demographic study is at present being undertaken by our Department of Community Medicine.

If urbanisation has an aetiological role in DU as was indicated by Segal *et al.*[9] and Robbs and Moshal,[7] then our figures apparently contradict this because a substantial number of rural cases are seen in our hospital annually. It could be that we have passed the stage of 'early urbanisation'. On the other hand, the observed increase in PU in rural patients could be due to the general development of rural areas (such as Venda) in our drainage area. These areas are, in a way, being 'urbanised' and this could explain the increased incidence.

Skilled : unskilled ratio

This has probably no significance. As with place of residence, figures for the number of skilled and unskilled for the population are not available. There was no predominance of skilled workers in our DU group.

Seasonal incidence

Fig. 1 shows a peak incidence of DU in August when all the years are added and a sufficient number of cases (1 379) are available.

McKenzie[12] found a peak incidence in Durban blacks during autumn and winter. However, his numbers were small. In a larger group (638) in the same area, Moshal *et al.*[10] found similar figures. In a group of 288 DU cases in whites in Pretoria,[4] a small peak was also found in August as with the blacks in this study; however, a small peak in March, similar to the Durban finding, was also seen. Our study contains the highest number of cases presented to date and the peak in August must therefore be noted.

Conclusion

The present study does not bear out the comment in the *SAMJ*[5] that DU increased during the period under study or that DU is being observed with increasing frequency in the black population.[8] A definite decrease in patients with PU was also not evident.

GU is still a rare disease in our area and does not seem to be increasing. The mean age and the peak age of DU patients are not changing and women with DU are 3 years older than their male counterparts. Blacks with DU are about 7 years younger than whites in our area and the peak age differs by about 12 years. DU occurs 10 years earlier than GU in our study, twice the time found in Johannesburg blacks.[6]

A definite seasonal peak in August, which we showed for DU, was also seen in whites in Pretoria.

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