usually possible. Only 21 (i.e. 1 in 7) required open reduction and wiring (Table VII).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No. of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdental eyelet wiring</td>
<td>75</td>
</tr>
<tr>
<td>Cap splints</td>
<td>11</td>
</tr>
<tr>
<td>Open reduction and wiring</td>
<td>19</td>
</tr>
<tr>
<td>Lower border</td>
<td>2</td>
</tr>
<tr>
<td>Upper border</td>
<td>1</td>
</tr>
<tr>
<td>Brenthurst splint</td>
<td>48</td>
</tr>
<tr>
<td>No active treatment</td>
<td></td>
</tr>
</tbody>
</table>

In complete contrast to maxillary fractures, we have tended to become more and more conservative in the treatment of the mandible. In fact, it is probable that older practitioners who merely used a barber bandage were not so wide of the mark!

There is no doubt that early immobilization and antibiotics are mandatory to achieve good results. Sepsis usually only occurred where the cases presented late (13 cases). One had a sequestrum and one developed malunion.

On the whole, occlusion has been very satisfactory on those we have followed-up.

Only once was an attempt made to surgically explore and realign a subcondylar fracture, and this was regretted. Usually immobilization is enough to achieve a satisfactory result.41

Today upper border wiring would certainly be employed in many more cases than previously, especially in bilateral fractures with a 'bucket handle' effect.

**DIABETIC RETINOPATHY AND NEPHROPATHY (POSTMORTEM INCIDENCE)**

J. WAINWRIGHT, M.B., Ch.B., M.D., Department of Pathology, University of Natal, Durban

Many clinical investigators have commented on the high incidence of diabetes mellitus in the Indian population of Natal as compared with the other population groups.2-3 So far there have been no histopathological data to support this contention. The purpose of this paper is to present a comparative study of the incidence of micro-aneurysmal retinopathy and Kimmelstiel-Wilson nephropathy—both very suggestive of diabetes mellitus—in hospital necropsies in the Indian, Bantu and White population of Durban, and hence to provide pathological evidence of the relative frequency of diabetes mellitus in these groups.

**METHODS**

**Retinal Preparations**

To avoid removal of the eyes from the cadaver, both globes were exposed through the base of the skull and were sectioned transversely with sharp scissors just behind the ciliary body, the posterior portion being removed. Usually the vitreous flows away leaving the retina in position. The posterior attachment of the retina at the optic cup was severed and the retina floated onto normal saline. A single radial incision was made in the retina, which was then floated flat onto a glass slide and allowed to adhere by a short period of air drying.

Seldom are teeth extracted, even when they are in the fracture line, unless their roots are obviously exposed. On follow-up, very few abscesses have been seen. Consequently it is felt to be perfectly safe to leave such teeth even when they are grossly carious.

**SUMMARY**

Three hundred and ninety-three facial fractures are presented, of which 154 were mandibular, 127 nasal and 112 maxillary.

Treatment of nasal fractures is unsatisfactory and requires much experience for good results. Maxillary fractures require early and active treatment, and mandibular fractures are best treated conservatively. Based on our experiences, certain trends in treatment have developed and are mentioned.

We wish to thank our dental colleagues, especially Dr Miles, who was available at all times for advice and the manufacture and supervision of the dental prostheses required; and Dr J. G. Burger, Medical Superintendent of Groote Schuur Hospital, for permission to publish this article and the use of hospital records.

**REFERENCES**

preparation may result in diffuse staining, so that this method does not lend itself to a survey.

Retinas from consecutive unselected necropsies on Indian, Bantu and White subjects were prepared in this way, as well as from additional known diabetic cases.

Kimmelstiel-Wilson Nephropathy

The diagnosis was made by examining a single paraffin section stained by haematoxylin and eosin from each necropsy. Other stains used were PAS and silver methamine, but the characteristic intercapillary hyaline bodies are readily recognized in H & E sections.

RESULTS

The number of cases from the White population, due to difficulty in obtaining specimens, is clearly inadequate for accurate comparison, and the ages of Bantu patients are in some cases questionable. With these reservations, the combined male and female incidence of 15.6% in the Indian hospital population over the age of 35 years, as compared with 5.7% in the White group and 4.6% in the Bantu, strongly supports the clinical contention that diabetes mellitus is more common in the Indian than in the other racial groups. Of 40 known Indian diabetics over the age of 35 years, 24 or 60% showed retinopathy. From this one may deduce an over-all incidence of diabetes in the hospital population of about 19% in males and 39% in females.

Table II shows a comparison of the numbers of microaneurysms in a series of retinopathy cases (the additional Bantu diabetic cases were not part of the consecutive series).

**TABLE II. NUMBER OF ANEURYSMS (BOTH RETINAE)**

<table>
<thead>
<tr>
<th>Indian</th>
<th>Bantu</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single aneurysm</td>
<td>8 (14%)</td>
<td>4 (14%)</td>
</tr>
<tr>
<td>1-5</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>6-10</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>11-20</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>&gt;20</td>
<td>17 (30%)</td>
<td>4 (14%)</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>28</td>
</tr>
</tbody>
</table>

The severe grades of retinopathy are more common in the Indian group as compared with the Bantu. One might contest the validity of making the diagnosis on finding a single aneurysm. However, a number of these cases were known diabetics. The youngest patient with microaneurysmal retinopathy was an Indian female of 19 years, but the incidence between 15 and 35 years is clearly low, this being the sole case in 151 patients (93 male and 58 female) in these age-groups.

**TABLE III. INCIDENCE OF KIMMELSTIEL-WILSON (NODULAR GLOMERULOSCLEROSIS) IN ROUTINE NECROPSIES**

<table>
<thead>
<tr>
<th>Age</th>
<th>Indians</th>
<th>Bantu</th>
<th>Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>35-44</td>
<td>2</td>
<td>75</td>
<td>2-7</td>
</tr>
<tr>
<td>45-54</td>
<td>1</td>
<td>108</td>
<td>9-0</td>
</tr>
<tr>
<td>55-64</td>
<td>6</td>
<td>80</td>
<td>7-5</td>
</tr>
<tr>
<td>&gt;65</td>
<td>4</td>
<td>62</td>
<td>6-4</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>325</td>
<td>4-0</td>
</tr>
</tbody>
</table>

**TABLE IV. INCIDENCE OF KIMMELSTIEL-WILSON LESIONS**

The above series of cases were collected over different periods of time, Bantu necropsies being more numerous than the other racial groups. In addition, the cases are not strictly consecutive (kidney tissue not being available from every necropsy), but there was no selection of material. It is clear that the classical Kimmelstiel-Wilson lesion is far less common than the retinal lesion, and in no instance has it been found in the absence of retinopathy. For comparison, the incidence of Kimmelstiel-Wilson lesions in known diabetics over 35 years of age is as follows:

<table>
<thead>
<tr>
<th>Race</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indians</td>
<td>14 out of 49 — 28%</td>
</tr>
<tr>
<td>Africans</td>
<td>7 out of 45 — 14%</td>
</tr>
<tr>
<td>Whites</td>
<td>14 out of 50 — 28%</td>
</tr>
</tbody>
</table>
The incidence in both Indians and Whites is lower than found by Ashton in a series of 203 diabetics (39-9%), but ages of the patients may differ. It may be that more glomeruli were examined. The low incidence of nephropathy in Bantu diabetics is probably explained by the greater number of deaths from diabetic coma at an earlier stage of the disease.

**DISCUSSION**

This survey was initially started as part of a study of the racial distribution of atheroma and the possible relationship to diabetes mellitus. In the hospital necropsy population, clinical investigations are often inadequate to confirm or exclude the presence of diabetes mellitus, and hence micro-aneurysmal retinopathy and Kimmelstiel-Wilson nephropathy were searched for at necropsy as an indication that the subject was diabetic.

The most specific diabetic lesion is the nodular glomerulosclerosis of Kimmelstiel-Wilson, but this lesion is well known to be found in only about 30-40% of diabetics at necropsy. Although diffuse glomerulosclerosis is probably more significant as the cause of proteinuria, its recognition is controversial. Lecompte's comments, 'It is of the greatest importance to realise that thickening of the basement membrane is by no means specific for diabetes . . . and that ... the greatest caution should be exercised in interpreting the minimal lesions now being described in diabetes and prediabetes'. In the early stage, identification of basement-membrane thickening is a problem for electron-microscopy and is even then fraught with difficulty; in the advanced stage it is often associated with the easily recognizable nodular lesion. Experience makes one sceptical of statements such as that by Gupta (quoted by Campbell),4 who claims to have found in Indians unequivocal evidence of non-infective nephropathy of the Kimmelstiel-Wilson type on renal biopsy in no less than 31 of 32 unselected diabetics in India. Basement-membrane thickening can occur with both hypertension and chronic pyelonephritis.

Micro-aneurysmal retinopathy precedes the renal glomerular lesion, but is regarded as less specific, and has been described in hypertension. Ashton5 says that he has injected retinæ from several cases of malignant hypertension and has frequently found micro-aneurysms. At the same time, he considers micro-aneurysms in an otherwise normal fundus as most characteristic of the diabetic state. The fact that diabetes in the Natal Indian is not uncommonly complicated by hypertension perhaps lessens the value of the results presented here. On the other hand, in this series retinæ from patients with malignant hypertension in whom diabetes could be excluded have not shown micro-aneurysms.

These results are also subject to error due to the technique employed. Micro-aneurysms may be restricted to one segment of a retina and on occasion may be solitary, so that an incomplete retinal preparation may lead to non-recognition of certain cases. Particularly in young individuals, blood may drain from the retinal vessels so that aneurysms could empty and fail to stain. Small retinal haemorrhages and choroidal pigment may simulate aneurysms, but where doubt existed these cases were discarded. Similarly, with kidney sections, a single glomerulus out of 20-30 glomeruli may show the characteristic nodular lesion, or almost all glomeruli may be involved. While questioning the value of statistical analysis of these results, since the population groups are so heterogeneous, there seems little doubt that diabetes and its retinal and renal complications are more prevalent in the Indian population of Natal than in the Bantu and White population.

The high incidence of overt diabetes in the Indian encourages one to seek vascular changes in the younger age-groups, where many subjects must be prediabetics. We are unable to comment on possible electron-microscopic changes, but search for vascular changes in the retina, kidney, skin, and muscle by light microscopy has been singularly unsuccessful.

**SUMMARY**

Micro-aneurysmal retinopathy is much more common in the Indian hospital population of Durban than in the other racial groups, being found in 11.8% of males and 23.3% of females over the age of 35 years. Kimmelstiel-Wilson nephropathy is also more common in the Indian population, but has a lower incidence than retinopathy.

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**REFERENCES**


**BOOKS RECEIVED : BOEKE ONTVANG**


