The Burden & Management of Ischaemic Heart Disease in Kenya

Dr Harun A Otieno FACC

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Disclosures

With regards to this presentation, I declare the following conflicts of interest:-

☐ Stocks
☐ Research grants
☐ Honoraria
☒ None
Objectives

• What do we know about IHD in Kenya?
• How do we manage IHD?
Kenya

- Inhabitants, 45 million
- Independence Dec. 1963
- Nairobi is the capital city
- English, Swahili, multilingual
- GDP per capita 3,238 $
- Per capita health expenditure, 45$ (415$)
- 40-50 Cardiologists
occurred between the two groups. In this same matched group there were seventeen myocardial infarcts among the Americans, while none were found in the East African autopsy series.
Ischaemic heart disease in a Kenya African case report and brief review of literature.

Ojambo HP.

Observed by doctors working at our largest National Referral Hospital
Described case reports of heart attacks in black Africans

(b) Hypertension and the heart

It is common knowledge that Africans are relatively immune to myocardial infarction from coronary artery disease, though they may develop a mild degree of coronary atherosclerosis of the non-fatty type, especially if they are hypertensive (Scott et al., 1961). They may also develop electrocardiographic signs of left ventricular hypertrophy and strain, but no myocardial infarction or ischaemia (Smith, 1966). Treatment of
Sudden Death in Kenya

Foul play?
Especially if politician
Poisoning?
HIV?

WITCHCRAFT!!
INTERHEART Africa Study

• Mean age of first MI, 54.3 years
• Hypertension and being Overweight (BMI 27.59) were a strong risk factor for AMI

Cardiovascular causes of death in an east African country: an autopsy study.

Ogeng'o JA, Gatonga P, Olabu BO.
Department of Human Anatomy, University of Nairobi, Kenya.

- CVD accounted for 13.2% of autopsy cases
- AMI 18.7%
- Pulmonary Thromboembolism 14.2%
- Hypertensive Heart Disease 9%
- Rheumatic Heart Disease 6.7%
N= 120, Acute MI Kenyatta National Hospital, 2000 - 2009

- Mean age 56.8 years
- Male: Female 2:1
- Hypertension 35%
- Diabetes Mellitus 20.8%
Objectives

What do we know about IHD in Kenya?
- Early reports suggested an African immunity to Acute MI
- Increasing cases of ACS in all communities
- More data needed

How do we manage IHD?
How do we manage ACS in Kenya

1. Is there anything *unique* about our patients?
2. What *facilities* are available to manage ACS?
3. What treatment do they receive?
4. Outcomes?
Acute coronary syndrome in an urban tertiary hospital, CVJA 2013, Shavadia et al.

<table>
<thead>
<tr>
<th>TABLE 1. BASELINE CHARACTERISTICS OF PATIENTS PRESENTING WITH ACS</th>
<th>STEMI (n = 62)</th>
<th>NSTEMI/UA (n = 49)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>63.3 ± 13.0</td>
<td>64.5 ± 15.2</td>
<td>NS</td>
</tr>
<tr>
<td>Male gender (%)</td>
<td>80.6</td>
<td>69.4</td>
<td>NS</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>26.7 ± 3.9</td>
<td>27.3 ± 4.8</td>
<td>NS</td>
</tr>
<tr>
<td>Chest pain as presenting symptom (%)</td>
<td>83.9</td>
<td>69.4</td>
<td>NS</td>
</tr>
<tr>
<td>Mean time to presentation (hours after symptom onset)</td>
<td>12.9 ± 17.3</td>
<td>29.3 ± 52.8</td>
<td>0.02</td>
</tr>
<tr>
<td>Mean heart rate at admission (bpm)</td>
<td>85 ± 22</td>
<td>82 ± 18</td>
<td>NS</td>
</tr>
</tbody>
</table>
Poor Transport Network
The emerging problem of coronary heart disease in Kenya.
Jablonski-Cohen MS¹, Kosgei RJ, Rerimo AJ, Mamlin JJ.

- CHD risk factors are increasing
- ECG remains integral in the diagnosis of acute MI
- Common anatomical variants of AMI are seen locally (MTRH)

Few Emergency departments have Working ECG machines!
"... I brought my little girl to the health center in my district in the south of Bujumbura. But the nurse wouldn’t see us as I didn’t have any money to pay for the consultation." Simeon, 2004
Reperfusion Therapy

Reperfusion with lytics < 30 minutes
Primary PCI in STEMI < 12 hours from symptoms, cardiogenic shock or contraindications to lytics

- 28/45 (62%) received fibrinolytic therapy
- 17 (38%) had primary PCI
- Door to Needle Time < 30 minutes, achieved in 43% of STEMI patients
- Door to balloon time of < 90 minutes, achieved in 35% cases.

AFjEM 2013
Why do we have delays?

<table>
<thead>
<tr>
<th>Reasons for delay in fibrinolytic initiation</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending GP seeking advice from senior Dr before starting fibrinolysis</td>
<td>28.6%</td>
</tr>
<tr>
<td>Difficulty in interpreting ECG</td>
<td>18.6%</td>
</tr>
<tr>
<td>Pt with atypical symptoms – delays diagnosis of AMI</td>
<td>12.9%</td>
</tr>
<tr>
<td>Pt in cardiac arrest before thrombolysis can be started</td>
<td>11.4%</td>
</tr>
<tr>
<td>Pt with hypertension</td>
<td>7.1%</td>
</tr>
<tr>
<td>Change of shift – Dr/Nurses could not attend timeously</td>
<td>7.1%</td>
</tr>
<tr>
<td>Delay in chest X-ray</td>
<td>4.3%</td>
</tr>
<tr>
<td>Not stock of agent in Casualty – fetch from pharmacy</td>
<td>4.3%</td>
</tr>
<tr>
<td>Waiting: Workups, intensive care beds, equipment</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

Education of medical officer contributed to 60% of delay in initiation of lytic therapy

Maharaj, RC et al.(2012) SAMJ 102:241
Where do patients go for PPCI?

Ethiopia - (4)
Sudan - (13)
RSA - (96)
Egypt - (182)
Treatment of ACS by Primary PCI

Count of Do you routinely perform primary angioplasty for Acute STEMI?

- Yes: YES
- No: NO
Treatment of Acute MI in AKUHN

- Cath lab receives both transfers and first presentation to AKUHN
- Pharmacoinvasive strategy: after hours and for referring hospitals
- Transradial access routine
- >95% drug eluting stents
- Clopidogrel > Ticagrelor
- CABG available
Outcomes of Acute Myocardial Infarction

- Recovery: 50.8%
- Heart Failure: 44.2%
- Death: 0.2%

Kenyatta National Hospital
QPS3.1:12A: AMI -1- Aspirin on Arrival

Measure: Aspirin on Arrival
Target goal: 100%
Reporting schedule: Quarterly

Definition: Aspirin received within 24 hours of arrival to the hospital for patients having an acute myocardial infarction (defined per coding on discharge or death summary for all AMI QPS datasets).

Rationale: The early use of aspirin in patients with acute myocardial infarction results in a significant reduction in adverse events and subsequent mortality.

<table>
<thead>
<tr>
<th>Period</th>
<th>Qtr1</th>
<th>Qtr2</th>
<th>Qtr3</th>
<th>Qtr4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Num</td>
<td>17</td>
<td>18</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Den</td>
<td>17</td>
<td>19</td>
<td>19</td>
<td>20</td>
</tr>
</tbody>
</table>

Analysis
- Target steadily met.
- Early diagnosis and management of AMI done.

Action
- Continued use of AMI pathway and effective re-evaluation of this process.
- Continued monitoring is appropriate.
- Emphasis on proper documentation.
- Timely and robust feedback to any breaching cases regarding.

### Rate
- Qtr1,14: 100%
- Qtr2,14: 95%
- Qtr3,14: 95%
- Qtr4,14: 100%
Objectives

What do we know about IHD in Kenya?
- Early reports suggested an African immunity to Acute MI
- Increasing cases of ACS in all communities
- More data needed

How do we manage IHD?
- Late presentation
- Delayed diagnosis
- Reperfusion > Primary PCI (radial vs. femoral)
- 5 - 10% mortality, in hospital
Challenges

NURSING STAFF
Full-time Nursing staff ranged from 2 - 10 per unit
Most staff received training in India/Asia subcontinent
Tanzania cath lab nurses were trained in Kenya
Most units have 2 radiographers full-time

INTERVENTIONAL TRAINING
India, UK, USA, RSA

"[they] are also being poached by industrialised countries. There are more nurses from Malawi in Manchester than in Malawi …” Glenys Kinnock, 2005
Medical Tourism to India

African countries contribute 32%
Loliondo, Tanzania - Babu's clinic
Conclusion

• Focus on Prevention of Acute MI, recognize symptoms
• Medical Education on ECG diagnosis of Acute MI
• Better use of existing facilities, improve systems
• Audits, registries protocols to improve care