Pitfalls in Management of Hypertension

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Persistent – higher than normal blood pressure can damage internal organs if untreated.

- There are no symptoms at first, but despite this, over time it increases the risk of many serious disorders, such as stroke, heart disease and kidney failure.
Hypertension in Bangladesh

• The burden of high blood pressure is being increased at an alarming rate from 8 percent in 1983 to 19 percent in 2012.

• In the year 2013, an estimated 12 million adult people in Bangladesh suffered from high blood pressure. (WHO)
Number of hypertensive patient has been going up in Bangladesh mostly because of

- Population ageing,
- Unplanned urbanization,
- Aggressive marketing of salty, sugary and fatty food and
- Sedentary lifestyle.

High consumption of tobacco has been contributing to the complications of high blood pressure to a large extent.
Pitfalls in Management of Hypertension

1. Physician related pitfalls
   - Diagnostic pitfalls
   - Therapeutic pitfalls

2. Patient related pitfalls
Cornerstone of Hypertension diagnosis is accurate Blood pressure measurement.

Practical issues-- Most of the cases hypertension, diagnosis is made on the basis of single BP recording.
How to diagnose hypertension?

- Diagnosis is based on more than one reading taken on more than one occasion.
- Recording BP at home and at work will provide additional information.
• If the clinic blood pressure is 140/90 mmHg or higher, ABPM confirm the diagnosis of hypertension. (NICE guideline)

• If a person is unable to tolerate ABPM, HBPM is a suitable alternative to confirm the diagnosis of hypertension. (NICE guideline).

• Cost of ABPM instrument-- 566 US Dollar.

❖ Practically, whether it is possible for low income countries?
Diagnostic Pitfalls
BP measurement related (contd.)

Which arm?

- BP should be measured in both arms in each visit.

- Practical issue- only 6.5% physician measure BP in both arm in each visit.
Diagnostic Pitfalls

**BP measurement related (contd.)**

Talking or hand gestures- rise of SBP + 7 mm of Hg
Diagnostic Pitfalls
BP measurement related (contd.)

Inappropriate position of the patient

- Sitting without back support result in falsely rise of SBP + 6 to 10 mm of Hg
- Unsupported arm result in unusually rise of SBP +1 to 7 mm of Hg
Diagnostic Pitfalls
Device related

Aneroid
Mercury
Automated Device
## Diagnostic Pitfalls

### Device related (contd.)

<table>
<thead>
<tr>
<th>Types of Device</th>
<th>Used by the Physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>1.66%</td>
</tr>
<tr>
<td>Aneroid</td>
<td>99.34%</td>
</tr>
<tr>
<td>Automated Device</td>
<td>None</td>
</tr>
</tbody>
</table>
### Recommended bladder dimensions for adults

<table>
<thead>
<tr>
<th>Cuff Type</th>
<th>Bladder Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard cuff</strong></td>
<td>Bladder $12 \times 26$ cm for the majority of adult arms</td>
</tr>
<tr>
<td><strong>Large cuff</strong></td>
<td>Bladder $12 \times 40$ cm for obese arms</td>
</tr>
<tr>
<td><strong>Small cuff</strong></td>
<td>Bladder $12 \times 18$ cm for lean adult arms and children</td>
</tr>
</tbody>
</table>
### Diagnostic Pitfalls

**Cuff and bladder related (contd.)**

<table>
<thead>
<tr>
<th>Mismatching of bladder and arm</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bladder too narrow or too short - under-cuffing</strong></td>
<td>Overestimation of BP—’cuff hypertension</td>
</tr>
<tr>
<td></td>
<td>Range of error:</td>
</tr>
<tr>
<td></td>
<td>Systolic BP : 3.2-12 mm of Hg</td>
</tr>
<tr>
<td></td>
<td>Diastolic BP : 2.4 to 8 mmHg</td>
</tr>
<tr>
<td></td>
<td>( as much as 30mmHg in obesity)</td>
</tr>
<tr>
<td><strong>Bladder too wide or too long- over-cuffing</strong></td>
<td>Underestimation of BP</td>
</tr>
<tr>
<td></td>
<td>Range of error: 10 to 30mmHg</td>
</tr>
</tbody>
</table>

*Under-cuffing more common than over-cuffing*
Diagnostic Pitfalls
Cuff related

Cuff over clothing- rise in SBP + 5 to 50 mm of Hg
Diagnostic Pitfalls
Cuff related

- Cuff not centered-rise in + 4 mm of Hg
Practical issues regarding BP cuff

- Only 53.8% physician check BP cuff size before BP measurement.
- Physician usually keep single BP instrument.
- Practically it is not possible to measure the arm circumference and then select BP cuff particularly in developing countries, where there is high patient doctor ratio.
• Adequate explanation about the procedure allow to alleviate
  - Fear and anxiety, especially in nervous subjects.

❖ **BP may be falsely high in improperly relaxed, anxious patient.**

• 57% physicians do not describe the procedure of BP measurement before the procedure.
Patients should be encouraged to

-relax

-advised that neither they nor the observer should talk to each other for the few minutes before and during the blood pressure measurement.
Diagnostic Pitfalls
Inadequate back ground history

- Taking tea, coffee
- Smoking
- Taking SLT (smokeless tobacco)
- Full urinary bladder

59% physicians do not take H/O taking tea, coffee, smoking before BP measurement.

Patients should refrain from smoking, ingesting caffeine for 30 minutes prior to measurement of BP.
Before taking the blood pressure, the observer should be in a comfortable and relaxed position, and should not rush the procedure.
# Diagnostic Pitfalls

## Observer error

<table>
<thead>
<tr>
<th>Observer error</th>
<th>Intra- and inter-observer error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic error</td>
<td></td>
</tr>
<tr>
<td>Terminal digit preference</td>
<td>Rounding to digit preference—often zero</td>
</tr>
<tr>
<td>Observer prejudice or bias</td>
<td>Adjustment of pressure to suit observer</td>
</tr>
</tbody>
</table>
Aneroid devices require regular calibration (6 monthly) against an accurate mercury sphygmomanometer over the entire pressure range.

81.7% physicians do not check validity of aneroid device.
• An auscultatory gap is not uncommon in elderly hypertensive patients.

• The systolic level can be thought erroneously to be 140 to 150 mm Hg when it really is 180 to 190 mm Hg.
• Lack of adherence of guideline
• Of the 167 countries surveyed
  – national hypertension guidelines were not available in 61%,
  – Antihypertensive are not affordable in 25%,
  – and basic equipments and drugs for the management of hypertension were not available in primary healthcare in 8% and 12% of countries, respectively.
Hypertension is a lifelong, incurable disease.

Complications of hypertension e.g. Heart failure, Stroke, Renal failure.

Necessity of control of hypertension.

Result if hypertension is not treated or not controlled.
• To adapt DASH diet
• To take regular exercise
• Necessity of lifestyle modification
Therapeutic pitfalls
Inadequate knowledge about duration of treatment

• Patients are not usually informed about the duration of treatment of hypertension, which result in
  - Injudicious stopping of the treatment when the patient become symptom free.
## Therapeutic pitfalls

**Time to get effect of antihypertensive drugs**

<table>
<thead>
<tr>
<th>Antihypertensive</th>
<th>Time to get optimum effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diuretic</td>
<td>4 to 6 weeks</td>
</tr>
<tr>
<td>Beta blockers, calcium channel blockers, and angiotensin converting enzyme (ACE) inhibitors</td>
<td>1 to 3 weeks</td>
</tr>
<tr>
<td>Angiotensin II receptor antagonists</td>
<td>2 to 4 weeks</td>
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</table>
Rapid up titration can be associated with adverse effects related to the cumulative dose, and patients may become less adherent to therapy.

"Start low and go slow" is a useful adage.
Therapeutic pitfalls
Cost of Drugs

- High cost of antihypertensive drugs in respect to income.
  -- Monthly income below 5000 taka in 79.4% hypertensive patients in Bangladesh.

- Less availability of some low cost drugs
  -- Chlorthalidone
  -- Enalapril
Patients related pitfalls
Patients related pitfalls

• Lack of adherence to ‘DASH’ therapy’ and Exercise
• This may be due to
  - Nothing visible
  - Pts do not appreciate these as the treatment.
Patient related pitfalls (contd.)

- Lack of adherence to antihypertensive.
- Injudicious stopping of the drugs.
- Irregularly taking antihypertensive.

-Only 46.67% patients take the drug regularly.
Patient related pitfalls (contd.)

- Wrong belief and perception of the patient.

- In Bangladesh
  - 4.1% hypertensive seek advice or remedy from traditional healers and
  - 1.4% receiving herbal or traditional remedy.
• Improper follow up
• Non-adherence to annual check up
• Hypertensive patients should do the following investigations 6-12 monthly.
  - Urine R/M/E
  - ECG
  - S.Creatinine & S. Electrolytes
  - Blood Glucose
  - Fasting lipid profile
Morbidity and mortality associated with HTN related complications is high, because of patient and doctors related pitfalls.

So, we should properly address the pitfalls and try to minimize the HTN related complications.

This program will have an immense effect on the hypertensive population.
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THANK YOU