O B S E R V A T I O N S
In the present study we studied:

1. Effect of hormonal replacement therapy (HRT) in women with surgically induced and/or natural menopause in relation to their:
   a. Symptoms and after effects of menopause.
   b. Serum lipoprotein profile.
   c. Cardiovascular functions.

2. Comparison of the effect of HRT in women with natural menopause and women with surgically induced menopause.

Patients who had achieved menopause naturally (Group A) and came to out patient department with symptoms pertaining to menopause, were subjected for first blood sampling. Premarin (0.625 mg) was given once daily and blood sample was taken every three monthly intervals.

First sample of blood from surgically induced menopause (Group B) was taken on the day of discharge from the hospital after the operation. HRT was started from three months after operation. Second sample was taken on 6 month.

In both the groups of subjects i.e. A and B, HRT was withdrawn after giving for 3 months. Third sample was taken after stopping HRT for 3 months.

The results are mentioned in the form of various tables.
TABLE I: Distribution of the cases according to their age.

<table>
<thead>
<tr>
<th>Groups</th>
<th>No. of cases</th>
<th>Age range (years)</th>
<th>Mean ± S.D. (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>25</td>
<td>45 - 55</td>
<td>47 ± 2.05</td>
</tr>
<tr>
<td>B</td>
<td>25</td>
<td>45 - 50</td>
<td>48 ± 2.15</td>
</tr>
</tbody>
</table>

TABLE II: Distribution of cases having H.R.T.

<table>
<thead>
<tr>
<th>Groups</th>
<th>No. of cases</th>
<th>Percentage</th>
<th>Medicated with</th>
</tr>
</thead>
<tbody>
<tr>
<td>A  (Natural menopause)</td>
<td>25</td>
<td>50.00</td>
<td>Premarin (0.625 mg)</td>
</tr>
<tr>
<td>B  (Surgically induced menopause)</td>
<td>25</td>
<td>50.00</td>
<td>Premarin (0.625 mg)</td>
</tr>
<tr>
<td>Symptoms</td>
<td>0-3 (%)</td>
<td>4-6 (%)</td>
<td>7-9 (%)</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Hot flushes &amp; night sweat</td>
<td>35</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>Backache</td>
<td>35</td>
<td>2</td>
<td>45</td>
</tr>
<tr>
<td>Itching</td>
<td>25</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Burning micturition</td>
<td>20</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Discharge P/V</td>
<td>20</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Ghabrahah</td>
<td>20</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Insomnia</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Palpitation</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Diaphoresis</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Genital prolapse</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dizziness</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dyspareuria</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Intestinal distension and constipation</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

It is obvious from the table III that HRT reduces post menopausal symptoms dramatically viz. hot flushes and backache from 35% to 5% and 35% to 2% respectively. The symptoms recur after stopping of HRT. The percentage of patients nearing to previous where the patients were not taking any HRT.
TABLE IV: Effect of HRT in patients of group B
(Surgically induced menopause).

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Period (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-3 (%)</td>
</tr>
<tr>
<td>Hot flushes &amp; night sweat</td>
<td>50</td>
</tr>
<tr>
<td>Ghabrahat</td>
<td>40</td>
</tr>
<tr>
<td>Insomnia</td>
<td>40</td>
</tr>
<tr>
<td>Diaphoresis</td>
<td>40</td>
</tr>
<tr>
<td>Discharge P/V</td>
<td>80</td>
</tr>
<tr>
<td>Backache</td>
<td>30</td>
</tr>
<tr>
<td>Itching</td>
<td>5</td>
</tr>
<tr>
<td>Burning micturition</td>
<td>2</td>
</tr>
</tbody>
</table>

SERUM LIPOPROTEINS LEVELS

Before starting of HRT: Group A

In patients of group A, the serum lipoproteins levels were as follows:

- One patient showed a rise in STC (228 mg/dl) and LDL (165 mg/dl).
- Five patients had serum STC in the range of 168-179 mg/dl with mean value of 173.4 mg/dl.
- Nine patients showed serum STC in the upper margin of normal values (200 mg/dl).
- Nine patients had serum triglyceride levels in the upper limit of normal values.
- Three patients showed STC level near to lower margin of normal values.
- Thirteen patients showed their STC levels in the range of 78-98 mg/dl.
- The level of HDL were from 34 to 46 mg/dl with mean values of 39.56 mg/dl
- One patient had increased level of LDL.
- Thirteen patients had moderate levels of LDL.
- Eleven patients had their LDL level in the normal range from 110.8 to 115.4 mg/dl.
- Eight patients had their LDL levels near to normal values i.e. 130 mg/dl.
- All the patients had their VLDL and LDL/HDL ratio in the normal range.

**Group B**

In patients of group B, the serum lipoproteins levels were as follows:

- Seven patients showed STC levels near to 200 mg/dl in the range of 192 to 198 mg/dl.
- Low levels of STC was observed in 5 patients.
- Twenty two patients had STC in the range of 170 to 188 mg/dl.
- Values of STC in 25 patients were as follows:
  
<table>
<thead>
<tr>
<th>Range</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 85 mg/dl</td>
<td>9 patients</td>
</tr>
<tr>
<td>85 - 95 mg/dl</td>
<td>11 patients</td>
</tr>
<tr>
<td>7 95 mg/dl</td>
<td>5 patients</td>
</tr>
</tbody>
</table>
- Four patients showed HDL levels near to lower margin of normal values (30 mg/dl).
- Six patients had LDL levels in the moderate range (7 130 mg/dl).
- Three patients showed LDL levels near to 100 mg/dl.
- Remaining 16 patients had LDL levels near to upper margin of normal range (130 mg/dl).
- All the patients showed normal values of VLDL and ratio of LDL/HDL cholesterol.

After taking HRT for three months

**Group A**
- Two patients showed border line levels of STC.
- Low levels of STC were observed in 5 patients.
- Remaining 18 patients showed STC levels near to normal values.
- Two patients had HDL values lower than previous values viz. before taking HRT. Mean difference being 2.5.
- One patient had same value of HDL before and after taking HRT.
- Remaining 22 patients had HDL levels higher than the values of before taking HRT.
- Twenty patients had values of LDL in the normal range or near normal (7130 mg/dl).
- One patient had decreased 4.2 mg/dl of LDL values than previous values.
- Four patients showed LDL levels near to normal limit of moderate range (130-156 mg/dl).
- All the patients had LDL/HDL ratio in normal range and majority of patients had higher values of VLDL than previous values.

- **Group B**
  - 7 patients showed STC levels more than previous values.
  - One patient had the same value of STC before and after taking HRT.
  - 17 patients showed STC values lower than the values before taking HRT.
  - One patient showed a rise in STC value after taking HRT for 3 months.
  - One patient had same value of STC before and after taking HRT.
  - Remaining 23 patients showed the following pattern of STG levels:
    - 0 - 5 mg/dl (mild) 16 patients
    - 5 - 10 mg/dl (marked) 7 patients
  - Rise in level of HDL was observed in 19 patients after taking HRT as follows:
    - Upto 2 mg/dl 6 patients
    - 3 - 4 mg/dl 10 patients
    - 5 - 8 mg/dl 3 patients
  - Three patients showed same HDL levels even after taking HRT.
  - A decrease in HDL levels was observed in 3 patients.
- One patient showed raised level of LDL. The difference being 1.8 mg/dl.

- Remaining 24 patients showed reduced levels of LDL after taking HRT.

- All the patients had ratio of LDL/HDL in normal range and higher VLDL than previous values.

**After withdrawal of HRT for 3 months**

**Group A**

- 15 patients showed STC values more than 200 mg/dl.

- Remaining 10 patients had STC Levels in the range of 180-200 mg/dl. Mean being 187.5 mg/dl.

- Three patients showed same values of STG after withdrawal of HRT as with HRT.

- Remaining 22 patients showed a rise in STG levels after withdrawal of HRT. The difference ranging from 12 to 10 mg/dl.

- Out of 22 patients 13 showed mild increase in STG levels (0-5 mg/dl) and 9 patients showed a rise of 5-10 mg/dl.

- Same levels of HDL were observed in 2 patients.

- 14 patients showed mild decrease (0-2 mg/dl) in HDL levels.

- Moderate decrease in HDL levels was observed in 5 patients after withdrawal of HRT.

- Six patients had marked decrease in HDL levels.
- Three patients showed higher values of LDL i.e. 7 160 mg/dl.
- Another three patients showed 2/130 mg/dl LDL levels.
- Rest of 19 patients showed LDL values near to lower limit of border line range via 130-150 mg/dl.
- All the patients had ratio of LDL/HDL in normal range.

**Group B**

- Two patients showed lower value of STC than the value after taking HRT.
- Remaining 23 patients showed a rise in STC value however, this rise was erratic. The difference being 2 to 12 mg/dl.
- Three patients had same values of STG while remaining 22 patients showed a rise in STG levels as given below:
  - 0 - 5 mg/dl: 12 patients
  - > 5 mg/dl: 9 patients
  One patient showed a decrease in STG level than the value of after taking HRT.
- The value of HDL remained same in 1 patient. While in 23 patients the HDL levels fell down and in one patient there was a rise in HDL level of 1 mg/dl.
- Nine patients showed moderate level of LDL (>130 mg/dl).
- Two patients had low levels of LDL after stopping HRT for three months.
- Remaining 14 patients had LDL levels near to lower limit of moderate level of LDL (130 mg/dl).
- One patient showed reduced level of LDL after stopping HRT than after HRT values.
- Remaining 24 patients showed a rise in LDL levels after stopping HRT than the value after HRT.
- All the patients had ratio of LDL/HDL in normal range. There was a rise in VLDL levels than after taking HRT.

**VAGINAL CYTOLOGY**

**Group A**

Out of 25 patients, 4 had discharge of per vaginum and subjected for vaginal cytology. Vaginal smear showed dominance of parabasal cells. This indicates low oestrogenic effect before the commencement of HRT.

After taking HRT for 3 months, 2 patients had discharge per vaginum. The smear showed dominance of basal cells. After withdrawal of HRT for three months four patients had discharge of per vaginum and were subjected for vaginal cytology which showed presence of basal cells.

**Group B**

Before the commencement of HRT, 20 patients had discharge per vaginum. Out of which 18 patients showed dominance of superficial cells. Two patients showed dominance of basal cells in vaginal smear.

After taking HRT, 3 patients had discharge per vaginum. Their cytology examination showed dominance of basal cells.
FALL IN LEVEL OF SERUM TRIGLYCERIDE AFTER TAKING H. R. T. FOR 3 MONTHS IN GROUP-A
RISE IN LEVEL OF SERUM TRIGLYCERIDES AFTER WITHDRAWAL OF N.E.T. FOR 3 MONTHS IN GROUP A
Graph showing fall in level of H.R.L. after stopping H.R.T. for 3 months in Group B.
Graph showing rise in STG in Group B patients after stopping HRT for 3 months.

Graph showing fall in level of STG level in group B patients after HRT.
After withdrawal of HRT, 5 patients had vaginal discharge and after cytology examination they showed dominance of basal cells.

E.C.G. RECORDING

Group A: Before taking HRT

1. Name: Hazra
   P.R.: 72/min, regular, sinus rhythm
   P wave: Normal, morphology and duration
   PR interval: 0.16 sec.
   Axis: + 60°
   QRS complex: 0.10 sec. normal configuration.
   ST segment: No depression, no coving & elevation.
   T wave: Normal configuration
   U wave: absent
   Comment: Within normal limit.

2. Name: Chiya Rani
   P rate: 72/min, regular sinus rhythm
   P wave: Normal duration and morphology.
   P.R. interval: 0.12 sec.
   Axis: + 60°
   QRS complex: 0.08 sec, normal configuration
   ST segment: No coving, depression or elevation.
   Comment: Normal E.C.G.
3. Name: Dropadi
   P. rate: 80/min, regular sinus rhythm
   P wave: Normal duration and morphology
   PR interval: 0.20 sec.
   Axis: +30°
   QRS complex: 0.12 sec, normal configuration
   ST segment: No coving, no elevation present.
   T wave: Normal configuration
   Comment: Within normal limit.

4. Name: Manju
   P. rate: 68/min, regular sinus rhythm.
   P wave: Normal morphology and duration
   PR interval: 0.16 sec.
   Axis: +75°
   QRS complex: 0.08 sec, normal configuration.
   ST segment: No depression, coving or elevation.
   T wave: Normal configuration.
   Comment: Normal E.C.G.
5. Name : Munni
P. rate : 75/min, normal sinus rhythm
P wave : Normal morphology and duration
Axis : +45°
QRS complex : 0.08 second, Normal morphology and duration.
ST segment : No coving, no depression, no elevation.
T wave : Normal morphology
U wave : Absent
Comment : Normal E.C.G.

6. Name : Bhagwati
P. rate : 75/min, regular sinus rhythm
P wave : Normal duration & morphology
PR interval : 0.16 sec
Axis : +30°
QRS complex : 0.08 sec.
ST segment : One segment ST depression in II, III, aVF.
T wave : Normal configuration
Comment : Within normal limit
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>Name</td>
<td>Kasturi</td>
</tr>
<tr>
<td></td>
<td>P. rate</td>
<td>72/min, regular sinus rhythm</td>
</tr>
<tr>
<td></td>
<td>P wave</td>
<td>Normal duration &amp; morphology</td>
</tr>
<tr>
<td></td>
<td>Axis</td>
<td>+60°</td>
</tr>
<tr>
<td></td>
<td>QRS complex</td>
<td>0.08 sec, no depression</td>
</tr>
<tr>
<td></td>
<td>ST segment</td>
<td>No coving, no depression.</td>
</tr>
<tr>
<td></td>
<td>T wave</td>
<td>Normal morphology</td>
</tr>
<tr>
<td></td>
<td>Comment</td>
<td>Normal E.C.G.</td>
</tr>
<tr>
<td>8.</td>
<td>Name</td>
<td>Premwati</td>
</tr>
<tr>
<td></td>
<td>P. rate</td>
<td>75/min, regular sinus rhythm</td>
</tr>
<tr>
<td></td>
<td>P wave</td>
<td>Normal morphology and duration</td>
</tr>
<tr>
<td></td>
<td>Axis</td>
<td>+ 50°</td>
</tr>
<tr>
<td></td>
<td>QRS complex</td>
<td>0.08 sec, normal morphology and duration.</td>
</tr>
<tr>
<td></td>
<td>ST segment</td>
<td>No elevation, no depression</td>
</tr>
<tr>
<td></td>
<td>T wave</td>
<td>Normal morphology</td>
</tr>
<tr>
<td></td>
<td>Comment</td>
<td>Within normal limit.</td>
</tr>
<tr>
<td>9. Name</td>
<td>Bhavni Bai</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>P. rate</td>
<td>32/min, regular sinus rhythm</td>
<td></td>
</tr>
<tr>
<td>P wave</td>
<td>Normal morphology &amp; duration</td>
<td></td>
</tr>
<tr>
<td>Axis</td>
<td>- 45°</td>
<td></td>
</tr>
<tr>
<td>QRS complex</td>
<td>0.08 sec, normal morphology and duration.</td>
<td></td>
</tr>
<tr>
<td>T wave</td>
<td>Normal morphology</td>
<td></td>
</tr>
<tr>
<td>U wave</td>
<td>Absent</td>
<td></td>
</tr>
<tr>
<td>Comment</td>
<td>Left axis deviation.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. Name</th>
<th>Laxmi</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. rate</td>
<td>72/min</td>
</tr>
<tr>
<td>P wave</td>
<td>Normal morphology &amp; duration</td>
</tr>
<tr>
<td>Axis</td>
<td>+ 30°</td>
</tr>
<tr>
<td>QRS complex</td>
<td>0.08 sec, normal morphology</td>
</tr>
<tr>
<td>ST segment</td>
<td>No coving, no depression, no elevation.</td>
</tr>
<tr>
<td>Comment</td>
<td>Within normal limit.</td>
</tr>
</tbody>
</table>
### After taking HRT for 3 months

11. **Name**: Janak Kishori  
**P. rate**: 68/min, sinus rhythm  
**P wave**: Normal morphology and duration  
**Axis**: +45°  
**QRS complex**: 0.12 sec, normal configuration  
**ST segment**: No coving, no depression, no elevation.  
**T wave**: Normal morphology  
**Comment**: Normal E.C.G.

12. **Name**: Kalpalia  
**P. rate**: 136/min, regular sinus rhythm  
**P wave**: Normal morphology & duration  
**Axis**: +40°  
**QRS complex**: 0.08 sec, normal morphology, and normal duration.  
**ST segment**: No elevation, no depression  
**T wave**: Normal morphology  
**Comment**: Sinus tachycardia
13. Name : Chamelli
P. rate : 60/min, regular sinus rhythm
P wave : Normal morphology and duration
Axis : + 90°
QRS complex : 0.08 sec, normal configuration
ST segment : No coving, no depression, no elevation.
T wave : Normal morphology
Comment : Within normal limit.

14. Name : Vimla
P. rate : 100/min, regular sinus rhythm
P wave : Normal morphology & duration
Axis : + 45°
QRS complex : 0.08 sec, normal morphology and duration.
ST segment : No elevation, no depression
T wave : Normal morphology
Comment : Normal E.C.G.
**Group B**

After taking HRT for 3 months:

1. **Name**: Kusum
   - **P. rate**: 60/min, regular sinus rhythm
   - **P wave**: Normal morphology and duration
   - **Axis**: + 45°
   - **QRS complex**: 0.08 sec, normal morphology and duration.
   - **ST segment**: No coving, no depression and no elevation.
   - **T wave**: Tall T wave in V₂, V₃, V₄
   - **Comment**: Within normal limit

2. **Name**: Teja
   - **P. rate**: 125/min, regular sinus rhythm
   - **P wave**: Normal morphology and duration
   - **Axis**: + 45°
   - **QRS complex**: 0.08 sec, normal configuration
   - **ST segment**: No coving, no depression, no elevation.
   - **T wave**: Normal morphology
   - **Comment**: Sinus tachycardia
3. **Name**: Susheela  
**P. rate**: 64/min, regular sinus rhythm  
**P wave**: normal morphology & duration  
**Axis**: +30°  
**QRS complex**: 0.08 sec, normal morphology and duration  
**ST segment**: No elevation, no depression  
**T wave**: Normal morphology  
**Comment**: Normal E.C.G.

4. **Name**: Ajesha  
**P. rate**: 75/min, regular sinus rhythm  
**P wave**: Normal morphology and duration  
**Axis**: +45°  
**QRS complex**: 0.08 sec, normal morphology and duration  
**ST segment**: No elevation, no depression  
**T wave**: Normal morphology  
**Comment**: Within normal limit
Ganesh

kalkash
7. Name
   P. rate  : Manju
   P wave  : 84/min, regular sinus rhythm
   Axis    : Normal morphology and duration
   + 60°
   QRS complex : Normal morphology & duration
   ST segment : No elevation or depression
   T wave : Normal morphology
   Comment : Normal E.C.G.

8. Name
   P. rate  : Vimla
   P wave  : 88/min, regular sinus rhythm
   Axis    : Normal duration & morphology
   + 110°
   QRS complex : 0.08 sec, normal morphology and duration.
   ST segment : No elevation or depression.
   T wave : Normal morphology
   Comment : Normal E.C.G.