DISCUSSION
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Nephrotic syndrome is a disease which can occur in any age group from infancy to extremes of age. In the present study the youngest case was of 14 years and oldest was of 65 years of age.

Nephrotic syndrome affects males more often than females. The male to female ratio was 4.7 : 1 and almost similar (4:1) ratio has been reported by Sarin and Sarin (1960). While Prakash et al (1965), Mukerjee et al (1973) and Sharma et al (1987) reported that this ratio was 2.3:1, 2.2:1 and 2 : 1 respectively.

In the present study maximum number of cases occurred in 3rd decade of life. Mukerjee et al (1973) also found the maximum number of cases in 3rd decade of life. Sharma et al (1987) and Sarin and Sarin (1960), Shanbhag (1973) also reported maximum number of cases in 2nd and 3rd decade of life.

The commonest presenting feature was oedema in the present study. It was present in 20(50%) cases at the time of onset of the disease but later on with the progression of disease all the 40(100%) cases had oedema. The oedema was reported in all the cases by Mukerjee et al (1973), Shanbhag et al (1973) and Sharma et al (1987). Like present study, Sarin and Sarin (1960) also found oedema in 56% of the cases initially but later on all of them developed oedema. But oedema was absent in 24% cases of nephrotic syndrome studied by Berman et al (1952).
Hypoproteinaemia, more specifically hypoalbuminaemia was said to have relationship between occurrence and severity of oedema and concentration of serum albumin. Squire et al. (1957) found that anasarca and paedal oedema were present when albumin level in the serum was below 1.6 and 1.8 gm% respectively but this view does not holds true any more, as Berman (1958) reported general anasarca with serum albumin level more than 2.5 gm%. Shreiner (1963) reported absence of oedema even serum albumin concentration was below 2.0 gm%. In the present study serum albumin less than 3.5 gm% was present in 30 (75%) cases while 10 (25%) cases had normal serum albumin level. Cases in which serum albumin levels was less than 2.5 gm% were only 6 in number (15%). Out of which only 4 had general oedema and 2 had pedal oedema. On the contrary patients who had normal serum albumin level (more than 3.5 gm%) were 10 (25%) in number. Out of them 9 (22.5%) cases had general oedema and 1 had paedal oedema. Thus these findings suggests that hypoalbuminaemia is not the only cause responsible for oedema but there are many other factors which decides the development of oedema, these includes dietary habits (Schreiner, 1963), Changes in functional status and ability of kidneys to eliminate salt and water. In nephrotic syndrome sodium retention occurs possibly due to reduction in glomerular filtration rate or due to increased secretion of aldosterone.
resulting from hypovolemia or increased formation of renin and angiotensin.

The duration of oedema ranged from 12 days to 2 years. Except one case, the duration of illness was less than one year in all cases. Sarin and Sarin (1960) also found the duration of symptoms mainly oedema less than 1 year in 92% of cases.

Various other clinical features which were present during the course of the illness were as follows. Pleural effusion was present in 4(10%) cases, while other workers, Prakash et al (1965) reported in 18% cases and Sharma et al (1987) reported in 11% cases. Ascites was found in 16(40%) cases. This corresponds with the observation of Prakash et al (1965) - 43%, and Sharma et al (1987) - 34%. However, Mukerjee et al (1973) reported it to be in 94% of the cases.

Hypertension was found in 7(17.5%) cases in the present study while Prakash et al (1985) recorded it in 23% cases. However, Mukerjee reported hypertension in 44% cases.

An uncommon observation in the present study was occurrence of hypotension. The systolic blood pressure \(<90 \text{ mm Hg} \) was found in 10(25%) cases. 8 cases of them had tuberculosis and 2 had no other associated illness. Histologically 6 of them were having membranous glomerulonephritis. One had membranoproliferative glomerulonephritis.
and 1 had amyloidosis. In rest wo cases histopathological features were not clear.

Shanbhag et al (1973) in their study showed 3 cases with hypotension out of 116 cases and two of them were having amyloidosis. This difference in histology showed absence of any relationship between hypotension and amyloidosis as Shanbhag illustrated.

In the present study most of the cases were having associated pulmonary tuberculosis and the addison's disease might be a cause of hypotension in these cases. Administration of diuretics and reduced blood volume may also have contributed to the developments of hypotension. However, no other worker from India and abroad has reported hypotension in their cases of nephrotic syndrome.

Hypoproteinaemia was present in 55% cases of present study. But Mukerjee et al (1973), Shanbhag (1973) and Prakash et al (1965) reported hypoproteinaemia in 74%, 73% and 63% respectively but due to associated changes and rise in globulin fraction total serum proteins is not a reliable indicator of urinary protein.

In the present study hypoalbuminaemia was found to be present in 75% cases. Estimation of serum albumin was more significant than estimation of total serum protein as urinary lose of proteins occur mainly in the form of albumin.
Hypercholesterolaemia (≥250 mg%) was seen only in 62.5% cases in present study. But Prakash et al (1965) found hypercholesterolaemia in 73%. This difference may be explained on the basis of inclusion of more cases having pulmonary tuberculosis which is associated with lower plasma cholesterol levels (Singh and Singh, 1987). But Shanbhag reported hypercholesterolaemia in 63% cases which is quite compatible with the present study.

Blood urea was found to be raised (≥40 mg%) in 60% cases but most of the cases (52.5%) were having blood urea level less than 100 mg/dl. Other workers from India Prakash et al (1965), Mukerjee et al (1973), and Shanbhag et al (1973) reported it in lesser number of patients i.e. 20%, 34%, and 27% respectively but remarkable difference may be explained on the basis of later presentation of our cases due to low socio-economic status and poor educational background in Bundelkhand region.

Aetiological factors in different studies in India and aborad are quite variable, which may be due to multiple factors. One of them could be use of different classification of nephrotic syndrome by different workers in different studies. Other factors may be regional factors depending upon social environment factors (Hayslett et al, 1973; Kar, 1958; Sarin and Sarin, 1960; Prakash et al, 1965; Vaishwara and Gulari, 1966; Mukerjee et al, 1973; Shanbhag et al, 1973 and Sharma et al, 1987).
**COMPARATIVE INCIDENCE OF HISTOLOGICAL LESIONS IN DIFFERENT STUDIES OF NEPHROTIC SYNDROME.**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Total No. of cases</th>
<th>MGN</th>
<th>MPGN</th>
<th>PGN</th>
<th>MLGN</th>
<th>Other</th>
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<tr>
<td>Pearl et al, 1963</td>
<td>34</td>
<td>11</td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Schreiner, 1963</td>
<td>111</td>
<td>41</td>
<td>-</td>
<td>36</td>
<td>-</td>
<td>34</td>
</tr>
<tr>
<td>Cameron, 1966</td>
<td>62</td>
<td>29</td>
<td>-</td>
<td>14</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Mukerjee et al, 1973</td>
<td>116</td>
<td>39</td>
<td>6</td>
<td>18</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>Sharma et al, 1987</td>
<td>250</td>
<td>14</td>
<td>44</td>
<td>35</td>
<td>64</td>
<td>63</td>
</tr>
<tr>
<td>Present study, 1991</td>
<td>31</td>
<td>16</td>
<td>8</td>
<td>1</td>
<td>-</td>
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</table>

In our study of 31 biopsy cases, membranous glomerulonephritis was the commonest lesion found in 51.6% cases of nephrotic syndrome. Similarly Schreiner (1971) found 47% cases of membranous glomerulonephritis in a collaborative study of adult nephrotic syndrome. From our country Prakash et al, Mukerjee et al and Shanbhag et al found 48%, 33% and 47% cases of membranous glomerulonephritis respectively.

Membranoproliferative glomerulonephritis constituted 25% cases in our study which is in agreement with Pearl et al (1963) (23.5%) but others reported it in lesser numbers e.g. Mukerjee et al (1973) – 5.2%, Shanbhag et al (1973) – 8.9%, Sharma et al (1987) reported it as 17.6% cases.
Proliferative glomerulonephritis was found in 3.2% cases in our study which is reported as 8% by Sharma et al (1987).

The minimal lesion glomerulonephritis was found absent in our study. Schreiner (1963) also found no case of MLGN, but on the contrary Sharma et al (1987) found the MLGN as commonest cause of nephrotic syndrom.

In our study Diabetes Mellitus and amyloidosis were found to be the secondary causes of nephrotic syndrome. The amyloidosis was present in 4(12.9%) cases out of 31 biopsy cases and it seems reasonable to say that it was because of pulmonary tuberculosis which was present in all the four cases. Sarin and Sarin (1960) found the amyloidosis in 66% cases of nephrotic syndrome. Prakash et al found renal amyloidosis in 22.8% cases but Sharma et al (1987) found it only in 6% cases and Mukerjee et al (1973) in none.

In the present study of 40 cases only 4 cases (10%) were found to be diabetic. These cases of diabetes mellitus were not biopsied because they were assumed to be the cases of diabetic nephropathy. Berman (1958) reported 7.3%. Sarin and Sarin (1960) reported as 4%, and Wahi (1962) - 9.4%. However, Mukerjee et al (1973), Sharma et al (1987) found diabetic nephropathy in 17.2% and 18.8% cases respectively.
There seems to be some association of nephrotic syndrome with tuberculosis but causal relationship was not established but in present study 21 out of 40 cases of nephrotic syndrome had tuberculosis which is 52.5% which is statistically highly significant finding.

In most of the earlier studies of nephrotic syndrome Sarin and Sarin (1960), Wahi et al (1962), Prakash et al (1965), Johney et al (1972) and Sharma et al (1987) in which tuberculosis was present. It was concluded that tuberculosis had led to the development of amyloidosis causing nephrotic syndrome.

However, Shah (1975) studied and biopsied 30 cases of pulmonary tuberculosis and found amyloidosis in 7 cases only and membranous glomerulonephritis in 2 cases. showing that the membranous glomerulonephritis may also be cause of proteinuria in the cases of pulmonary tuberculosis associated with nephrotic syndrome.

Similarly Singh et al (1987) studied 150 cases of nephrotic syndrome out of which 97% cases were associated with tuberculosis and 60 of them were having amyloidosis. Remaining 37 cases of nephrotic syndrome associated with pulmonary tuberculosis in which non amyloid lesions were responsible for the development of nephrotic syndrome.

Thus in cases of tuberculosis it is very likely that proteinurea was not only due to development of amyloidosis but due to membranous glomerulonephritis or some other kidney pathology.
Jain et al (1986) biopsied 42 cases of pulmonary tuberculosis and found abnormal histology in 23 cases, of which 14 were in nephrotic range. These abnormal histological diagnosis included amyloidosis in 2 cases, membranous glomerulonephritis in 4 cases, proliferative glomerulonephritis in 2, chronic pyelonephritis in 7 and cloudy swelling in 3 cases.

In present study amongst the cases of nephrotic syndrome with pulmonary tuberculosis, amyloidosis was present in 4 cases. 11 cases had membranous glomerulonephritis, 2 cases were having membranoproliferative glomerulonephritis. Three cases were not biopsied due to presence of diabetes mellitus. Most of these changes in tuberculosis are non-specific except amyloidosis and their aetiological correlation is debatable.

Keeping all these things in mind membranous glomerulonephritis seems to be of special interest found in present study. (Shah et al (1975) and Jain et al(1986). It seems likely that damage to kidney parenchyma is produced by tubercular bacilli directly or indirectly to stimulate the release of autoantigens which perpetuate the process of further kidney damage.

In this study of 21 cases of pulmonary tuberculosis with nephrotic syndrome were found. Duration between pulmonary tuberculosis and nephrotic syndrome ranged from 1 month to more than 18 months and all the
cases were scattered between these two extremes. Thus, it shows that chances of development of nephrotic syndrome are not related with the duration of pulmonary tuberculosis.

Development of nephrotic syndrome was unrelated to antitubercular treatment in our study as shown by the fact that 52.3% cases were without antitubercular treatment and 47.7% cases were on antitubercular treatment which shows almost equal incidence of nephrotic syndrome in both the groups. It rules out any possible contribution of antitubercular drugs in the development of nephrotic syndrome.