Thyroid dysfunction may perturb liver function. Knowledge of the association between hypothyroidism and deranged biochemical markers of liver function is important for the clinician, to consider an evaluation of thyroid function in the work up of the patient with altered liver function tests.\[6,14\]

This study include about 100 patients attending the clinical Biochemistry OPD, IGGMC, Nagpur for routine thyroid test. Serum values of Thyroid stimulating hormone (TSH), thyroxine (T4) and tri-iodo thyronine (T3) were assayed and Liver specific enzymes like activities of aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP) estimated in all patients. Collected sample was analysed for Liver enzymes, run on Autoanalyser EM 460 in clinical Biochemistry Laboratory, IGGMC, Nagpur. Thyroid tests were run on ELISA reader & washer. Serum values of Thyroid stimulating hormone (TSH), thyroxine (T4) and tri-iodo thyronine (T3) were assayed by ELISA tests and values were compared & correlated with Liver enzymes level. The data was analysed & Pearsons Correlation was obtained, p value < 0.05 considered as significant

RESULTS: Results of our study shows Positive Pearsons correlation between TSH & Liver enzymes in thyroid dysfunction while there is Negative Pearsons correlation between T3,T4 with Liver enzymes. P value is found to be statistically significant ie < 0.05.

CONCLUSIONS: Thyroid dysfunction patients should be regularly checked for biochemical parameters of Liver enzymes. It can be concluded that thyroid hormones altered liver function tests. It is thus recommended that liver function tests interpretation in thyroid dysfunction must be advised to prevent progression of disease.

KEYWORDS : Liver Function Test, Thyroid Dysfunction, T3, T4, Tsh, Ast, Alt And Alp

OBJECTIVES OF THE STUDY
1) To evaluate the effect of thyroid dysfunction on liver function tests
2) To study Pearsons correlation between Liver enzymes & thyroid profile

METHOD OF COLLECTION OF DATA & SELECTION OF SUBJECTS:
This study include about 100 patients attending the clinical Biochemistry OPD, IGGMC, Nagpur for routine thyroid test. History was taken as per designed proforma and consent form was obtained. We collect 5 ml blood sample in plain bulb. Collected sample was analysed for Liver enzymes as well as thyroid test ie T3,T4 & TSH. (Thyroid tests were run on Elisa reader & washer).

Serum values of Thyroid stimulating hormone (TSH), thyroxine (T4) and tri-iodo thyronine (T3) were assayed by ELISA tests and values were compared & correlated with Liver enzymes (AST,ALT).
For T3, T4, TSH – Immunoassay Elisa kit method on Elisa Reader & Washer

Normal Range – T3 -0.52 to 1.85 ng/ml, T4 - 5 to 15 ug/dl, TSH – 0.39 to 6.16 uIU/ml

Analysis was carried on Autoanalyser EM – 460 in clinical Biochemistry lab, IGGMC for Serum AST,ALT & ALP . All estimations was done & their values were correlated & correlated. The data was analysed & Pearson's Correlation was obtained, & . P value < 0.05 was considered statistically significant.

RESULTS

Table No 1 : Mean Values of T3, T4, TSH (Thyroid Test) & AST , ALT, ALP (Liver enzymes)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T3</td>
<td>1.9427</td>
<td>.34098</td>
<td>100</td>
</tr>
<tr>
<td>T4</td>
<td>6.55</td>
<td>2.650</td>
<td>100</td>
</tr>
<tr>
<td>TSH</td>
<td>5.634</td>
<td>4.7064</td>
<td>100</td>
</tr>
<tr>
<td>AST</td>
<td>48.020</td>
<td>39.7865</td>
<td>100</td>
</tr>
<tr>
<td>ALT</td>
<td>49.880</td>
<td>42.0221</td>
<td>100</td>
</tr>
<tr>
<td>ALP</td>
<td>167.440</td>
<td>79.7502</td>
<td>100</td>
</tr>
</tbody>
</table>

Table No 2 : Pearsons Correlation between Thyroid Hormones & Liver specific Enzymes

<table>
<thead>
<tr>
<th></th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>T3</td>
<td>-0.734**</td>
<td>0.00</td>
<td>100</td>
</tr>
<tr>
<td>T4</td>
<td>-0.723**</td>
<td>0.00</td>
<td>100</td>
</tr>
<tr>
<td>TSH</td>
<td>-0.756**</td>
<td>0.00</td>
<td>100</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Result of our study shows TSH level (Mean - 5.63) shows positive correlation with serum enzymes specific for liver ie AST,ALT & ALP by Pearsons correlation (Table 2) Similarly Vice versa with T3, T4 shows Negative Pearsons Correlation with liver specific enzymes.

The findings of our study is in corroboration with findings of the study by Kalita N et al,[6]

Yadav A. et al.[7], p.d Griffiths et al.[8] and Pandey R. et al.[8] Malik and Hodgson[10] mentioned that thyroid hormones T3 and T4 are essential for the growth, development and function of all organs of the body. They regulate BMR of all cells of the body including the hepatocytes and thereby modulate hepatic function. The liver in turn metabolises thyroid hormones and regulates their systemic endocrine effects. Therefore thyroid dysfunction may disturb liver function and liver disease affects thyroid hormone metabolism and a variety of systemic diseases affect both organs. It highlights a close relationship between thyroid and liver in health and disease.

In our study TSH level showed significant positive correlation with AST, ALT and ALP levels in thyroid dysfunction. (Table 2). Our study may be explained by the observations made by Targhar G. et al.[11], Khan T. et al.[12] and Prakash A. et al[13], that thyroid alteration effects the liver enzymes like ALPAST and ALT. The Pearson's positive correlation of TSH levels with AST and ALT levels is statistically significant (p < 0.05).

CONCLUSION –

To conclude, the present study indicates that thyroid disorder might cause significant effect on metabolism of various cells like hepatocytes reflected by increase in biochemical parameters of liver function test ie activity of AST, ALT and ALP. This suggests that hypothyroid patients should be regularly checked for biochemical parameters of liver function tests. Early detection and treatment can prevent the further complications related to the disorder and will be helpful during the management of thyroid patients.

REFERENCES