Relationship between Adenoids and Chronic Suppurative Otitis Media

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A Roentgenographic planimetric study confirms that hypertrophied Adenoids have a definite relationship with Chronic Suppurative Otitis media.

Chronic suppurative otitis media is a condition where long standing purulent discharge from the middle ear, through a perforation in the tympanic membrane, takes place. It has been classified into two main groups—the safe type, where the disease confines itself to the mucosa and the unsafe type, where the disease is associated with erosion of the underlying bone.

Adenoids are a recognized aetiological factor causing otitis media in infants and children. It is now the carefully considered opinion of many otolaryngologists that infection of nasopharyngeal lymphoid tissue is a factor of the greatest importance in diseases of the ear (Proctor, 1947).

Glogau (1920), Jones (1930), Rodger (1933), Irvin (1943), Emerson and Dowdy (1943) and Proud (1953) all confirm the above held view in their studies. Ito (1968) studied 324 normal and 336 abnormal cases in the age group 3-20 years by measuring the adenoid thickness and found adenoids to be abnormally hypertrophied in cases of chronic sinusitis, suppurative ear diseases and obstructed breathing.

The present study was undertaken to find the clinical significance of the adenoid mass area in relation to the bony nasopharynx in cases of chronic suppurative otitis media (safe type). It is the relation or ratio of the amount of lymphoid tissue to the size of nasopharynx that is important and not the actual amount of lymphoid tissue present.

Material and Methods

The study was carried out on 100 subjects in the age group 4-16 years, divided into three groups. These cases were selected from the patients attending the Ear, Nose and Throat department of the Nehru Hospital attached to the Postgraduate Institute of Medical Education & Research, Chandigarh.

GROUP I—This comprised of 25 normal subjects without any adenoid hypertrophy symptoms or discharge from the ear.

GROUP II—This comprised 25 subjects with adenoid hypertrophy symptoms such as nasal obstruction, mouth breathing, chronic rhinitis, sinusitis, epistaxis or malocclusion of the teeth.

GROUP III—This comprised of 50 subjects of chronic suppurative otitis media (safe type) who were having discharge from the ears from 3 months to 5 years without any complication.

On the skiagram, the following points were marked (Fig. 1) ba, or bi=basion, ho=hornion, pm=posterior margin of hard hand palate, ad 1 & ba= margins of adenoids.

Basion, is the most posteroinferior point on the clivus of os. occipitale, ho, or Hornion, is the vomer’s most dorsal contact point on the body of sphenoid bone in the mid-saggital plane between the alae of vomer, pm is the posterior margin of the hard palate. ad 1 and ad 2 are the margins of soft tissue shadow of adenoid mass in the bony nasopharynx.

pm—ho—ba—pm—was taken as Bony nasopharynx area. Ad 2—ho—ba—ad 1—ad 2 is the area of adenoid mass in relation to the bony nasopharynx.

The areas were measured with an Albrit planimeter, which is an instrument commonly used to measure the areas of irregular plane figures.

Observations

Table 1 shows the mean adenoid mass area, mean bony nasopharynx area and the ratio between the two areas in group I, II, III.
ADENOIDS AND C.S.O.M.—SINGH & ARORA

The average size of bony nasopharynx is 3.66 ± 0.13 sq cms with the standard deviation of 0.92.

The average ratio between the two is 59.14 ± with the standard deviation of 19.07.

Discussion

The study was undertaken to find out the relationship between the adenoid hypertrophy and chronic suppurative otitis media by measuring the adenoid mass and the area of the bony nasopharynx. An attempt has been made to correlate the relationship between the adenoid mass area and the bony nasopharynx area in relation to the development of chronic suppurative otitis media.

In literature, the adenoid hypertrophy has been described as minimal, moderate or marked, by measuring a line drawn from the posterior clinoids perpendicular to the base of the sphenoid bone and then to the margin of soft tissue as outlined by air in the nasopharynx. This method does not actually measure the adenoid mass area and no information can be obtained about the size of the nasopharynx.

The maximum hypertrophy as seen in the lateral skigram of nasopharynx occurs in the bony nasopharynx (pm—ho—ba—pm), keeping in view the importance of relationship between the adenoid mass area and the bony nasopharynx, the adenoid hypertrophy is classified into four grades.

Grade ‘O’ Or No Adenoids

When the ratio between the adenoid mass area and bony nasopharynx is less than 25% which means less than 25% of bony nasopharynx is occupied by the adenoid mass.

Grade ‘I’ Or Small Adenoids

When the ratio between the adenoid mass area and bony nasopharynx is 25 to 50% which means 25 to 50% of the bony nasopharynx is occupied by the adenoid mass.

Grade ‘II’ Or Moderate Hyperplasia of the Adenoids

When the ratio between the adenoid mass area and bony nasopharynx is 50 to 75% which means 50 to 75% of the bony nasopharynx is occupied by the adenoid mass.

In this group the posteronasopharyngeal breathing space is partially affected.

Grade ‘III’ Or Large Adenoids

When the ratio between the adenoid mass area and bony nasopharynx is 75 to 100% which means 75 to 100% of the bony nasopharynx is occupied by the adenoid mass. This for all practical purposes, more or less, completely occludes the posteronasopharyngeal space.

The groups I, II and III fall into the following grades of adenoid hypertrophy (table II).

| TABLE II |
| Showing grades of adenoid hypertrophy in each group. |

<table>
<thead>
<tr>
<th>GROUP</th>
<th>GRADE (% age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 25 cases</td>
<td>0</td>
</tr>
<tr>
<td>II 25 cases</td>
<td>4</td>
</tr>
<tr>
<td>III 50 cases</td>
<td>6</td>
</tr>
</tbody>
</table>

As is evident from the above figures the majority of cases in Group I fall into grade ‘O’ and ‘I’. In other words in normal subjects the ratio between the adenoid mass area to the bony nasopharynx is less than 50%. Whereas majority of cases in Group II and III fall into grade ‘II’ and ‘III’ of adenoid hypertrophy. This implies that if in a case of adenoid hypertrophy with symptoms of chronic suppurative otitis media, the ratio of the adenoid mass area to the bony nasopharynx is more than 50%, one can reasonably be certain that the adenoids are the etiological factor and their removal is indicated.

The comparison of Group I and III by ‘t’ test of significance shows that there is significant difference in their adenoid mass area and in the ratio of the adenoid mass area to the bony nasopharynx (P<0.01).