Assessment of allergy and immunity in children in relation to tonsillectomy

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Although tonsil surgery is one of the oldest documented surgical procedures considerable controversy still exists regarding the precise indications and benefits derived from such an operation. Moreover tonsillectomy or adeno-tonsillectomy has been accused for a long time in compro-mising the immune system (Vienna et al., -1971) and in preci-pitating attacks of asthma in allergic children (Sobel, 1960- El Hefny, 1968 and Jazbi, 1980).Therefore, this work was done in an attempt to evaluate the effect of tonsillectomy or adenotonsillectomy on the allergic and immune state of the individual.Our present study comprised three groups of children.1-Non allergic group included 27 children.2-Allergic group included 21 asthmatic children. All patients of these 2 groups had had recurrentattacks of acute tonsilitis with a minimum of 3 attacksin the preoperative 6 months.3-Control group included 10 normal school childrenwith the same age range of patient's groups.All children of the present study were subjectedto the following:1- Full history was taken and incase of allergic patients a questionaires were filled by the parents.2-Complete general and E.N.T examinations.3-Routine investigations done before tonsillectomy operation viz Compelete Blood Picture- E.S.R.-Bleeding time - Clolting Time - Hb% and StoolAnalysis.4-Immunological assay of IgG, IgA, IgE.5-B- & T-lymphocytes determinations in the periphe-ral blood.6-Eosinophilic count in the peripheral blood.7-Skin allergic tests.One month after adeno-tonsillectomy the above mentioned investigations were repeated and all patients were clinically followed up for a period up to 6 months post-operatively.Our results demonstrated the following1-Significant lower pre-operative serum IgA level as compared with the control level in both allergic and non allergic groups. After adeno-tonsillectomy serum IgA level didnot change significantly from the preoperative level in both groups.2-Significant high pre-operative serum IgG level in both allergic and non allergic groups. After the operation the serum IgG level DROPped significantly in both groups to within the normal control level.3-Significant high pre-operative serum IgE level in the allergic patients after the operation serum IgElevel DROPped significantly from the preoperative level but still significantly higher than the normalcontrol level.As regards the non allergic group the preoperativeand post operative serum IgE didnot change significantly from the normal control -level.4-Significant high eosinophilic count in the allergic patients before adeno tonsillectomy and this countdid not change significantly after the operation and still -higher than the normal control count.In the non allergic patients the pre and post

operativeeosinophitic counts were within the normal control count.5-Significant high pre-operative B-lymphocyte percentage in non allergic patients and within the normal percentage in the allergic children as compared with the control percentage. After adeno-tonsillectomy the B-lymphocytes percentages DROPped significantly to within the normal control percentage in the non. allergic patients and didnot change significantly from the pre-operative percentage in the allergic patients.6-Significant low pre-operative T-lymphocytes percetage in the allergic patients as compared with the control percentage after the operation the T-lymphocyte percentage did not change significantly.In the non-allergic patients there was no significant changes in the pre and post-operative T-lymphocytepercentages from the normal control percentage.7- In significant changes between the pre- and post-operative skin tests results in both allergic andnon allergic group.Sixteen asthmatic patients (76%) out of the twenty one allergic patient showed positive skin test.House dust was found to be the most important causative allergen in ten asthmatic patients out of sixteen cases with positive skin tests.Significant correlation between serum IgE level and skin test results twelve asthmatic patients (75%) out of sixteen allergic patients with positive skin test were found to have high serum IgE level.8-Signifiant reduction in the erythrocyte sedimentation rate after tonsillectomy operation.9-Clincial follow up of our patients up to 6 months post-operatively showed marked reduction in the frequency of sore throats after tonsillectomy (the mean frequency of sore throats was 4 attacks/6 months before the operation and 1.5 attacks/6 months after the operation).In significant reduction in the asthmatic attacks in the allergic patients after tonsillectomy (the mean frequencyof asthmatic attacks was 6 attacks before tonsillectomy and 5 attacks after the operation). However, three asthmatic patients got marked improvement with no more asthmaticattacks in the post operative periods of follow up.10- Generally tonillectomy or adenotonsillectomY operation did improve the general health in the majority of our patients even in the allergic ones. The parametersfor this improvement after the operation were:Fall in the E.S.R. and the marked reduction in thefrequency of sore throats.from our results we conclude the following:1-Serum IgA immuno deficiency is prevalent among children with chronic tonsilitis. As the -immunoglobulin A is responsible mainly for mucosal defence against invading micro organisms. This may explain why these children suffer from recurrent throat infectionsand other do not.2-An elevated total serum IgE level and high blood eosinophilia are characteristics of allergic disease and together with positive skin test are highly diagnostic for allergy.3-The insignificant changes of post-operative serum IgE (non allergic group), serum IgA levels, bloodeosnophilis and skin tests results from thepre-operative finding together with the insignificant changes in the frequency or severity of asthmatic attacks in the postoperative period of followup indicate that tonsillectomy operation doesn’t alter the allergic state of the individual.4-Adeno-tonsillectomy or tonsillectomy doesn’t seemto compromise the immunological function since non of serum immunoglobulin levels or B and T lymphocyte percentages DROPped significantly below the normal control level.Serum IgA level which was found significantly low before tonsillectomy did not -change after the operation and still lower than the control level.Serum IgG and (B lymphocytes % in non allergic patiants) DROPped significantly after the operation

but to within the normal control level.5-It is very clear that whatever the immunological function of the tonsils their removal will leave the majority of children adequately supplied with immunoglobuline resources and the central controller of the immune system in man seems to be more widespread in distribution and not restricted to any single organ.6- Post-operative followup showed that tonsillectomyor adeno-tonsillectomy when properly indicated does improve the general health as well reduce the frequency of sore throat attacks in the majority of patients even in allergic ones.