in asthmatics and beta adrenergic blocked (propanalol treated) normal subjects support this concept.

The beta adrenergic receptor is thought to be the cell membrane bound enzyme adenyl cyclase, which when stimulated causes an increase in cyclic 3′, 5′ adenosine monophosphate (CAMP). Increasing CAMP has been found to relax bronchial smooth muscle and inhibit release of histamine and slow reacting substance from human lung tissue. Recently, decreased lymphocyte CAMP levels were found in persons with severe asthma.

Bronchial asthma, therefore, can be viewed as a hyperreactive state of the airways resulting from an imbalance of the autonomic nervous system. Drug therapy is aimed at correcting this defect by increasing intracellular CAMP levels in an attempt to restore the balance.

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REFERENCES

Szentivanyi A: The beta adrenergic theory of atopic abnormality in bronchial asthma. J Allergy 42:203-232, 1968

Middleton E: Autonomic imbalance in asthma. Adv Intern Med 18:177-197, 1972

Use of Intravenous Isoproterenol in Unresponsive Status Asthmaticus

ISOPROTERENOL, which is structurally similar to epinephrine, is primarily a beta adrenergic stimulator. Therefore, its major effects are bronchodilation, decreased peripheral vascular resistance, and increased rate and contractility of the heart. Isoproterenol is commonly administered by inhalation in the treatment of acute asthma. It is also frequently used intravenously in the management of atrioventricular block and similar cardiac abnormalities in a dose range of 0.01 to 0.1 μg per kilogram of body weight per minute. Recently, isoproterenol given intravenously has also been found to be effective in the treatment of status asthmaticus. However, the amounts used have been much more massive than those found effective in treating cardiac arrythmias. Wood et al were successful in treating 17 of 19 children in respiratory failure secondary to asthma using intravenously administered isoproterenol. Therapeutic effects were obtained with doses of 0.08 to 2.7 μg of isoproterenol per kilogram of body weight per minute. The possibility of avoiding the use of intubation and respirator therapy in children with status asthmaticus, who are in respiratory failure, makes this mode of therapy very attractive.

The major complication seems to be cardiac arrythmias. One of the children in Wood's series did develop tachycardia and ventricular arrythmias, necessitating discontinuation of the drug.

Increased hypoxia is a well known occurrence when isoproterenol is given by inhalation. Although hypoxia was not found when the drug was given intravenously, increased ventilation perfusion abnormalities have been reported during isoproterenol inhalation.

Intravenously given isoproterenol may have a place in the treatment of respiratory failure secondary to asthma in children. However, such therapy should be approached with extreme caution and should include adequate monitoring of blood gas, as well as cardiac and vital signs. Time and more experience will clarify the role of intravenously administered isoproterenol in the treatment of asthma.

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REFERENCES

Wood DW, Downes JJ, Scheinkopf H, et al: Intravenous isoproterenol in the management of respiratory failure in childhood status asthmaticus. J Allerg Clin Immunol 50:75, 1972

Knudson RJ, Constantine HP: An effect of isoproterenol on ventilation perfusion in asthmatic versus normal subjects. J Appl Physiol 22:402, 1967

Status of a New In Vitro Test: RAST

THE RADIOALLERGOSORBENT test (RAST) for measuring IgE antibodies to specific allergens was developed by Wide, Bennich and Johansson as an outgrowth of their studies on the first recognized IgE myeloma protein. IgE was previously shown by Ishizaka to be associated with the reaginic antibodies characteristic of atopic allergy, and the RAST procedure is the best method presently available for quantitating antibodies of the IgE class. In brief, the technique uses an excess of allergen chemically bound to a cellulose disc. The disc is incubated with serum and specific serum antibodies become attached to the disc after which all other antibodies and serum proteins are washed away. Then, purified radiolabelled rabbit antibodies to IgE are added. These bind to the disc in proportion to the amount of IgE antibody in the serum.

Studies employing the RAST procedure have taught us that IgE antibodies generally increase in allergic subjects during natural exposure to seasonal pollens and that there is an apparent