Table 1—Effects of Isoproterenol and VIP on Histamine-induced Bronchoconstriction

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<th>HIST†</th>
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<tr>
<td></td>
<td>HIST+ISO</td>
<td>HIST+ISO</td>
<td>HIST+VIP</td>
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<tr>
<td>HIST*</td>
<td>Subject</td>
<td>HIST (28 µg)</td>
<td>(375 µg)</td>
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*Mean ± SE (n) from all control histamine challenges.
†Data calculated from Figure 1. First value is response to first histamine challenge and second value is response to second histamine challenge conducted 5 h later, immediately after vehicle administration or pretreatment with isoproterenol or VIP.
‡Cumulative dose units of histamine (sum of histamine concentration in mg/ml x number of breaths taken) that decreased FEV1 by 20%.

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|        |        |        |        |        |

Abbreviations: HIST = histamine; ISO = isoproterenol; VIP = vasoactive intestinal peptide;

when injected intravenously into an intact cat preparation, indicating that VIP had not adhered to the plastic surfaces of the nebulizer in sufficient amounts to lower its biological efficacy.

The lack of effectiveness of aerosolized VIP may result from rapid metabolic inactivation or from avid binding to mucus layer proteins; alternatively, because of its molecular size or configuration, VIP may be denied access to airway smooth muscle cells when administered topically. In isolated human airways, VIP has been reported to have only weak relaxant actions which may provide the most plausible explanation for its ineffectiveness in the present study. Regardless of the cause, the present results demonstrate that aerosolized VIP, at a dose previously shown to protect against histamine-induced bronchoconstriction in dogs, fails to protect against histamine-induced bronchoconstriction in human subjects.

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Since completion of this study, another report has been published demonstrating the lack of effectiveness of aerosolized VIP in protecting against exercise-induced bronchoconstriction in asthmatics (Bundgaard A, Enehjelm SD, Aggestrup S. Pretreatment of exercise-induced asthma with inhaled vasoactive intestinal peptide [VIP]. Eur J Respir Dis 1985; 64(suppl 129):427-29).

REFERENCES


Communications to the Editor

Gorlin's Formula vs Intraoperative Measurement of the Orifice Area in Mitral Valve Stenosis

To the Editor:

I read with interest the article by Evora et al (Chest 1983; 84:190) in which they conclude that intraoperative measurement of the mitral valve area with a Foley balloon is simple, safe and reliable, but the results obtained are greater than the values calculated by Gorlin's formula.

I think there are two possibilities for the systematic differences observed: 1) the circular form of the Foley balloon (direct measurement) is changed to an elliptical form with a smaller diameter (probably similar to the results obtained by Gorlin's formula), because the balloon of the Foley catheter is compressed by the mitral valve; 2) the Foley balloon expands to the diameter of the mitral orifice and a larger area is obtained.

I think the report by Evora and Colb shows the value of the Gorlin's formula.

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To the Editor:

We are grateful to Drs. Alvarez and Arceo for their addition to the hypothesis on the possible reasons why direct intraoperative measurements yield higher values as compared to Gorlin's calculations of the stenotic mitral valve area. Although they refer to two other different possibilities, it would be more appropriate to consider that, in fact, only one technical pitfall could, in theory, contribute to explain the differences found: when pulled from the atrium to the left ventricle, the Foley balloon would have an elliptical form, with the smaller diameter actually passing through the mitral orifice, the larger diameter being in the direction of the pulling force. A more spherical form would be restored at the moment of measurement of the diameter of the balloon, now free of compressing forces at the level of the valve orifice. Thus, a larger diameter than that actually passing through the valve would be measured.

We think this speculative possibility raised by Drs. Alvarez and Arceo can definitely be excluded in our measurements. Although no effort has been made to determine the exact force driving the balloon (eg, at a value corresponding to the transvalvar gradient as measured during catheterization), extreme care was always taken to avoid any modification in the shape of the balloon. We believe that other factors could account for the discrepancy seen in our results, as discussed previously. In addition, it must be acknowledged that the mitral orifice, either normal or stenotic, is not uniformly circular in cross-section, as pointed out by Dr. Wann's Editorial.

We would like to reemphasize that in spite of discussed shortcomings of the method, we believe its main application consists of providing a reliable comparative basis for noninvasive postoperative follow-up studies. In this regard, studies in progress in our Laboratory reveal good correlation between direct measurements and two-dimensional echocardiography.

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REFERENCES