Journal of Biomedical Research

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Research Resume of Jeffrey M. Drazen, M.D.
Editor-in-Chief, New England Journal of Medicine Professor of Medicine, Harvard Medical School

Dr. Drazen´s performed the translational research that led to the introduction of the first novel asthma treatment since the 1970s. While a medical student, Drazen, working the laboratory of Dr. K. Frank Austen, demonstrated that biologically produced slow-reacting-substance of anaphylaxis (SRS-A) was an extremely potent bronchoconstrictor in guinea pigs. When the chemical constituents of SRS-A were identified as leukotrienes C4, D4 and E4, Drazen was the first to demonstrate that these agents were the most potent human bronchconstrictor substances ever identified.

Next Drazen found elevated levels of urinary leukotrienes in patients presenting to the emergency room for treatment of spontaneously occurring asthma. He then demonstrated that administration of an inhibitor of the enzyme responsible for the first committed step in leukotriene synthesis, ALOX-5, resulted in decreased severity of laboratory-induced asthma and spontaneously occurring asthma. These findings eventually led to the introduction into the pharmacopea of four different anti-asthmatic drugs and marketed to over 4 million patients worldwide.

Drazen then used this new class of drugs as tools to study the biology of asthma. He identified a functional DNA sequence variant in the ALOX-5 gene and found that patients with this variant had a decreased response to anti-leukotriene treatment, thus accounting for a fraction of the variance in the treatment response on a genetic basis.

In the summer of 2000, Drazen became the editor-in-chief of the New England Journal of Medicine. One of the major issues he has tackled in this post is the loss of autonomy of academic investigators as more and more clinical research is funded by the pharmaceutical industry. To help ensure the independence and accountability of academic investigators he organized the 12 journals represented on the International Committee of Medical Journal Editors to change their guidelines for the submission of papers to medical journals.

Jeffrey M. Drazen, M. D.-10 Most Significant Publications

(1) Drazen JM, Austen KF. Effects of intravenous administration of slow-reacting substance of anaphylaxis, histamine, bradykinin, and prostaglandin F2alpha on pulmonary mechanics in the guinea pig. J Clin Invest 1974; 53:1679-1685.

(2) Drazen JM, Austen KF, Lewis RA, Clark DA, Goto G, Marfat A et al. Comparative airway and vascular activities of leukotrienes C-1 and D in vivo and in vitro. Proc Natl Acad Sci USA 1980; 77:4354-4358.

(3) Slutsky AS, Drazen JM, Ingram RH, Jr, Kamm RD, Shapiro AH, Fredberg JJ, Loring SH, Lehr J. Effective pulmonary ventilation with small-volume oscillations at high frequency. Science. 1980; 209:609-611.

(4) Weiss JW, Drazen JM, Coles N, McFadden ER Jr, Lewis R, Weller P, Corey EJ, Austen KF. Bronchoconstrictor effects of leukotriene C in humans. Science. 1982; 216:196-198.

(5) Griffin M, Weiss JW, Leitch AG, McFadden ERJ, Corey EJ, Austen KF et al. Effects of leukotriene D on the airways in asthma. N Engl J Med 1983; 308:436-439.

(6) Israel E, Dermarkarian R, Rosenberg M, Sperling R, Taylor G, Rubin P et al. The effects of a 5-lipoxygenase inhibitor on asthma induced by cold, dry air. N Engl J Med 1990; 323:1740-1744.

(7) Israel E, Cohn J, Dube L, Drazen JM. Effect of treatment with zileuton, a 5-lipoxygenase inhibitor, in patients with asthma: a randomized controlled trial. JAMA 1996; 275(12):931-936.
(8) In KH, Asano K, Beier D, Grobholz J, Finn PW, Silverman EK et al. Naturally occurring mutations in the human 5-lipoxygenase gene promoter that modify transcription factor binding and reporter gene transcription. J Clin Invest 1997; 99(5):1130-1137.
(9) Drazen JM, Yandava C, Dube L, Szczerback N, Hippensteel R, Pillari A et al. Pharmacogenetic association between ALOX5 promoter genotype and the response to anti-asthma treatment. Nature Genetics 1999; 22:170-172.
(10) Davidoff F, DeAngelis CD, Drazen JM, Nicholls MG, Hoey J, Hojgaard L et al. Sponsorship, Authorship, and Accountability. N Eng J Med. 2001, 345: 825-827.