

Homenaje póstumo a un gran médico e investigador: Dr. Dante Peñaloza

Dante Peñaloza fue un gigante escondido en los andes peruanos. Un investigador de raíz. Alguien que luchó hasta el fin de sus días para desvendar las manifestaciones cardiopulmonares, electro-vectorcardiográficas y hemodinámicas del pequeño circuito de los habitantes de las alturas. La fisiología normal y patológica pulmonar en las alturas. Sentó las bases de la enfermedad de Monge caracterizado por policitemia e hipoxemia los cuales descienden si se reduce la altitud. Se cree que se debe a un excesivo nivel de producción de las células rojas de la sangre, lo que aumenta la capacidad de transporte de oxígeno por parte de la sangre pero también aumenta la viscosidad de la sangre, produciendo un flujo de sangre desparejo por los pulmones (V/Q mismatch). Sin embargo, es también considerado una adaptación de las enfermedades pulmonares y del corazón a condiciones de vida marcadas por una hipoxia crónica en altitud. Los síntomas y signos más frecuentes son dolor de cabeza, adormecimiento, tinnitus, dificultades para respirar, palpitaciones, perturbaciones del sueño, fatiga, anorexia, confusión mental, cianosis, y dilatación de las venas.

La muerte de Dante debe ser motivo de alegría porque cumplió su misión en este planeta con hidalguía y coraje montando un laboratorio de investigación en las alturas a más de 4500 metros de altitud.



Laboratorio donde Dante Peñaloza trabajó a más de 4500 metros de altura en los andes peruanos

En lo personal estoy feliz porque conseguimos homenajearlo en vida el año pasado con publicación histórica en el Journal of Electrocardiol (*Sotomayor-Perales JL1, Schapachnik E2, Barbosa-Barros R3, Pérez-Riera AR4. A tribute in life to the world icon of the cardiology of heights: Dr. Dante Peñaloza from Peru. J Electrocardiol. 2018 May - Jun;51(3):496-498.*)

Su formación inicial como cardiólogo ocurrió en el legendario Instituto Nacional de Cardiología de México (INCM). Fue compañero de uno de mis mentores: el inolvidable Profesor João Tranchesi con quien describieron el primer vector de activación ventricular (**Penaloza D, Tranchesi J. The three main vectors of the ventricular activation process in the normal human heart. I. Its significance. Am Heart J. 1955 Jan;49(1):51-67**), 15 años que Dick Durrer lo comprobara en el corazón humano experimentalmente (**Durrer D, van Dam RT, Freud GE, Janse MJ, Meijler FL, Arzbaeher RC. Total excitation of the isolated human heart. Circulation. 1970 Jun;41(6):899-912.**) Peñaloza consiguió ser un Joven habiendo pasado los 90 años. La juventud termina cuando se apaga el entusiasmo y lo que sobraba en él era este atributo. Adiós Joven de casi 100 años que dios te tenga en su reino!!

Andrés R Pérez-Riera MD PhD

Video de una clase magistral de Peñaloza

<http://cienciatecnologiainnovacion.blogspot.com/2012/10/fisiologia-pulmonar-en-altura.html>



15 de Mayo, 1922-11 de Marzo de 2019



Peñaloza y sus tres mujeres Su esposa y sus dos hijas Liliana y Marisol

A seguir relacionamos algunos de los aportes a la ciencia de Dante y su equipo.

Article: Pulmonary Hemodynamics in Children Living at High Altitudes

Dante Penaloza · Francisco Sime · Luis Ruiz

Abstract: There are numerous publications on altitude-related diseases in adults. In addition, an International Consensus Statement published in 2001 deals with altitude-related illnesses occurring in lowland children who travel to high altitudes. However, despite the millions of children living permanently at high altitudes around the world, there are few publications on altitude-related diseases and pulmonary hemodynamics in this pediatric population. In this paper, we review the published... [Show More](#)

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Article: The Heart and Pulmonary Circulation at High Altitudes Healthy Highlanders and Chronic Mountain Sickness

Dante Penaloza · Javier Arias-Stella

Abstract: More than 140 million people worldwide live >2500 m above sea level. Of them, 80 million live in Asia, and 35 million live in the Andean mountains. This latter region has its major population density living above 3500 m. The primary objective of the present study is to review the physiology, pathology, pathogenesis, and clinical features of the heart and pulmonary circulation in healthy highlanders and patients with chronic mountain sickness. A systematic review of worldwide literature was... Show More

Article · Apr 2007 · Circulation

Article: Consensus Statement on Chronic and Subacute High Altitude Diseases

Fabiola Leon-Velarde · Marco Maggiorini · John T. Reeves · Almaz Aldashev · Gustavo Zubieta-Calleja

Abstract: This is an international consensus statement of an ad hoc committee formed by the International Society for Mountain Medicine (ISMM) at the VI World Congress on Mountain Medicine and High Altitude Physiology (Xining, China; 2004) and represents the committee's interpretation of the current knowledge with regard to the most common chronic and subacute high altitude diseases. It has been developed by medical and scientific authorities from the committee experienced in the recognition and... Show More

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Article: Altitude and hypertension

L Ruiz · **D Peñaloza**

Abstract: In order to study the prevalence of hypertension and some of the factors relevant to its natural history, cross-sectional surveys were performed during the period 1967 to 1973 in five small Peruvian communities, two located at sea level and three above 13,000 feet of altitude. In total, 4,359 persons were studied at sea level (1,970 males and 2,389 females) and 3,055 at high altitude (2,189 males and 866 females). At high altitude, the age-adjusted prevalence of hypertension (particularly... [Show More](#)

[Article](#) · Aug 1977 · [Mayo Clinic Proceedings](#)

Article: Hypoxemia, pulmonary hypertension, and low cardiac output in newcomers at low altitude

F Sime · **D Peñaloza** · L Ruiz · N Gonzales · R Postigo

Abstract: Cardiopulmonary function studies at rest and during moderate and submaximal exercise were performed on 8 sea level athletes at sea level and on the 1st and 5th day of residence at 7,800 ft of altitude. Following ascent, arterial oxygen saturation diminished 4% at rest and 4 to 7% on exertion, whereas oxygen uptake decreased 10% at rest and 7 to 9% during exercise. Cardiac index was reduced 10% solely at rest on the 1st day at altitude and 20 and 15% at rest and exercise, respectively, on the... [Show More](#)

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Article: Bradycardia, increased cardiac output, and reversal of pulmonary hypertension in altitude Natives living at sea level

F Sime · **D Peñaloza** · L Ruiz

Article: Chronic cor pulmonale due to loss of acclimatization (chronic mountain sickness)

D Peñaloza · Francisco Sime

Abstract: Ten male subjects with chronic mountain sickness were studied in Cerro de Pasco, Perú at 14,200 feet above sea level. Cyanosis, extreme polycythemia and very low values of arterial oxygen saturation were frequent findings. Hypoxia and polycythemia of severe degree are related to alveolar hypoventilation demonstrated in previous studies. Roentgen examination as well as electrocardiography

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Article · Jul 1971 · The American Journal of Medicine

Article: [Occurrence of arterial hypertension and ischemic heart disease in high altitudes]

L Ruiz · M Figueroa · C Horna · **D Peñaloza**

Article · Jul 1969 · Archivos del Instituto de Cardiología de México

Article: Systemic blood pressure in white men born at sea level: Changes after long residence at high altitudes

Emilio Marticorena · Luis Ruiz · José Severino · Javier Galvez · **Dante Peñaloza**

Abstract: A retrospective survey performed in 100 men born at sea level, residing at 12,398 feet of altitude for 2 to 15 years, has provided a basis for studying the systemic blood pressure changes possibly associated with prolonged residence in a hypoxic environment. Comparison of the blood pressure at the initial and final examinations revealed: (1) decrements of 10 mm. Hg or more for systolic and diastolic pressures in the whole sample in 56 and 46 per cent of the subjects, respectively; (2)... Show More

Article · Apr 1969 · The American Journal of Cardiology

Article: Circulatory dynamics during high altitude pulmonary edema

Dante Penaloza · Francisco Sime

Abstract: Cardiac catheterization studies have been carried out in 2 young male subjects who experienced acute pulmonary edema after a brief sojourn at sea level, when they returned to their native town located at 14,200 feet above sea level. The investigation was performed at this altitude during the acute episode and was repeated after complete recovery. Further studies were made in 1 subject after prolonged residence at sea level. Severe hypoxemia, a marked degree of pulmonary hypertension and... Show More

Article · Apr 1969 · The American Journal of Cardiology

PENALOZA D, ARIAS-STELLA J, SIME F, RECAVARREN S, MARTICORENA E. THE HEART AND PULMONARY CIRCULATION IN CHILDREN AT HIGH ALTITUDES: PHYSIOLOGICAL, ANATOMICAL, AND CLINICAL OBSERVATIONS. *Pediatrics*. 1964 Oct;34:568-82.

PENALOZA D, GAMBOA R, DYER J, ECHEVARRIA M, MARTICORENA E. The influence of high altitudes on the electrical activity of the heart. I. Electrocardiographic

and vectorcardiographic observations in the newborn, infants, and children. Am Heart J. 1960 Jan;59:111-28.

Article: Pulmonary Pressure, Cardiac Output, and Arterial Oxygen Saturation during Exercise at High Altitude and at Sea Level

Natalio Banchemo · Francisco Sime · **Dante Peñaloza** · Julio Cruz · Emilio Marticorena

Abstract: The response elicited by exercise on pulmonary pressure, cardiac output, and arterial oxygen saturation in 35 lifetime residents of high altitude has been studied at high altitude (14,900 feet above
