

Anesthesiology  
65:704, 1986

## Closed-circuit Anesthesia Made Easier

To the Editor:—Closed-circuit anesthesia, or low-flow anesthesia, has become increasingly popular in our center because it permits a better understanding of the mechanisms of absorption of anesthetic agents.

In closed-circuit anesthesia the fresh gas flow is equal to oxygen uptake ( $\dot{V}_{O_2}$ ) plus anesthetic uptake. Brody's equation<sup>1</sup> is a convenient way to calculate  $\dot{V}_{O_2}$  by multiplying  $\text{kg}^{3/4}$  by 10.

Many anesthesiologists find this equation impractical;

ultimately, this may limit their use of closed-circuit anesthesia. We propose a simplified way to calculate  $\dot{V}_{O_2}$  by substituting  $0.3 \text{ kg} + 3$  for  $\text{kg}^{3/4}$  in Brody's equation (table 1).

LUC FRENETTE, M.D.  
Resident II

ROBERT BAILLARGEON, M.D.  
Department of Anesthesia  
Maisonneuve-Rosemont Hospital

LUC PERREAU, M.D.  
Director, Department of Anesthesia  
University of Montreal

5415 L'Assomption Blvd  
Montreal, Quebec  
Canada H1T 2M4

## REFERENCE

1. Brody S: Bioenergetics and Growth. New York, Reinhold, 1945

(Accepted for publication August 25, 1986.)

TABLE 1.  $\dot{V}_{O_2}$  as Calculated by Each Formula

Weight (kg)	10 ( $\text{kg}^{3/4}$ )	10 (0.3 kg + 3)
10	56	60
20	95	90
30	128	120
40	159	150
50	188	180
60	216	210
70	242	240
80	268	270
90	292	300
100	316	330

Anesthesiology  
65:704-705, 1986

## Pharmacokinetics and Physiognomy

To the Editor:—My attention was called to the term "physiognomy" appearing in the *ASA Annual Refresher Course Lectures, 1985*.<sup>\*</sup>† Both lectures reproduce a table in which item 8 reads, "Pharmacokinetics are unaltered by altered physiognomy." The same term appears in the lecture, "Reasons to preferentially select general anesthesia,"‡ published in the *International Anesthesia Research Society 1986 Review Course Lectures*.

As far as I know these are the first three instances in which this unusual term, "physiognomy," appears in the anesthesiology literature. The concept is stated as follows: "Time course of anesthetic effect should be relatively unaffected by altered body habitus,"<sup>\*</sup> and "Thus, anesthetic

requirements in terms of the MAC of an inhalation anesthetic is similar for thin, fat or muscular individuals."<sup>†</sup>

I fear an inappropriate word may take hold. The following comments are an attempt to suggest we should not use the term "physiognomy" to denote "body habitus."

A most interesting book called *La Physiognomie ou L'Art de Connaitre les Hommes d'apres les Traits de leur Physiognomie*<sup>1</sup> (Physiognomy or the Art of Knowing People According to their Facial Features) was written in the 18th century by Johann Kasper Lavater, a Swiss theologian who was born in Zurich on November 11<sup>2</sup> or 15,<sup>1</sup> 1741, and died in the same city on January 2, 1801. Lavater is considered as the founder of the "science" of physiognomics,<sup>2</sup> physiognomy being "the systematic relation of psychological characteristics to facial features or body structure. Since many efforts to specify such relationships have been discredited, the term, physiognomy, commonly connotes pseudoscience or charlatany on the level of fortune-telling or palmistry."<sup>3</sup>

\* Saidman L: Advantages-disadvantages of inhalation anesthesia. Thirty-sixth Annual Refresher Course Lectures, 123A, 1985.

† Stanley TH: Advantages-disadvantages of narcotic anesthesia. Thirty-sixth Annual Refresher Course Lectures, 123B, 1985.

‡ Stanley TH: Reasons to preferentially select general anesthesia. International Anesthesia Research Society, Review Course Lectures, 1986.

Webster<sup>4</sup> defines physiognomy as follows: "From the Greek physiognomonía, physis, nature, and gnomon, one who knows. 1) the practice of trying to judge character and mental qualities by observation of bodily, specially facial, features; 2) the face; facial features and expression, specially as supposedly indicative of character; 3) apparent characteristics; outward features or appearance."

*Stedman's Medical Dictionary*<sup>5</sup> thus defines physiognomy: "1) The countenance, especially regarded as an indication of the character; 2) the estimation of one's character and mental qualities by a study of the face and general bodily carriage."

Clearly, physiognomics refers to the interpretation of character and personality by examination of the individual's external aspects, particularly the facial expression, and not to "body habitus" *per se*.

Physiognomy rests in the 18th century philosophers' world, has Lombrosian overtones, and is remindful of phrenology. Perhaps it would be preferable to use terms with a direct connotation, such as somatotypes,<sup>4-9</sup> to refer to different "body types." In the Brazilian medical literature the term "biotypology" has been used for decades in reference to the study and classification of different "body types."<sup>6</sup>

As long as I am offering criticisms, perhaps I should offer suggestions. For instance, different somatotypes could be classified as normosomatic, leptosomatic, and pachysomatic. The Greek prefixes "lepto" (slender) and "pachy" (thick)<sup>5</sup> were used by Bovet in 1951 to divide neuromuscular blocking agents into leptocurares (the slender depolarizer molecules) and pachycurares (the bulky nondepolarizer molecules).<sup>10</sup>

The concepts could then be restated as: "Time course of anesthetic effect should be relatively unaffected by different somatotypes," and "Thus, anesthetic requirements in terms of the MAC of an inhalation anesthetic is similar

for normosomatic, leptosomatic, or pachysomatic individuals."

CARLOS PARSLÖE, M.D.  
*Anesthesiologist*  
*Hospital Samaritano*  
*Rua Conselheiro Brotero, 1486*  
*01232-São Paulo-SP, Brazil*

The author is grateful to Prof. J. M. Andrews (Plastic Surgeon, Escola Paulista de Medicina, São Paulo, SP, Brazil), who made available his personal copy of the French translation of Johann Kaspar Lavater's book.<sup>1</sup>

#### REFERENCES

1. Lavater JG: La Physiognomonie ou L'Art de Connaitre les Hommes d'apres les traits de leur physionomie. Traduction nouvelle par H. Bacharach. Precedee d'une notice par A.D'Albanes. Paris, Publie par Gustave Havard, 24, Rue des Mathurins-Saint-Jacques. (No date printed)
2. The New Encyclopaedia Britannica, Micropaedia, vol. 6, 15th edition. 1978
3. The New Encyclopaedia Britannica, Micropaedia, vol. 7, 15th edition. 1978
4. Webster's New 20th Century Dictionary Unabridged, 2nd edition, 1983
5. Stedman's Medical Dictionary, Illustrated, 23rd edition. Baltimore, Williams and Wilkins, 1976
6. Berardinelli W: Biotypologia. Constituicao. Temperamento. Carácter, 3rd edition. Rio de Janeiro, Livraria Francisco Alves, 1936
7. Wulfsohn NL, Joshi CW: Thiopentone dosage based on lean body mass. *Br J Anaesth* 41:516-521, 1969
8. Sheldon WH, Stevens SS, Tucker WV: The Variation of Human Physique. New York, Harper and Row, 1945
9. The New Encyclopaedia Britannica, Micropaedia, vol. 9, 15th edition. 1978
10. Bouchet N du, Brigand J el: Anesthésie Réanimation. Paris, Editions Médicales Flammarion, 1957

(Accepted for publication August 25, 1986.)

*In reply:*—It is a pleasure to be corrected in so erudite a fashion. My apologies to Lavater, Britannica, and Stedman's.

LAWRENCE J. SAIDMAN, M.D.  
*Professor of Anesthesiology*

*Department of Anesthesiology*  
*University of California, San Diego Medical Center*  
*225 Dickinson*  
*San Diego, California 92103*

(Accepted for publication August 25, 1986.)