

### ***Anesthesiology* Communication on Potentially Offensive Content**

Publication of research in *Anesthesiology* dates to July 1940. Some previously published content may contain subject matter that reflects attitudes, biases, and conventions that are offensive or ethically unsound in relation to current societal norms and goals. This previously published content does not reflect the core values of the editors of *Anesthesiology*. The editors consider it important to acknowledge its harmful impact and maintain a complete historical record so that future generations may learn about these biases. The editors of *Anesthesiology* take this issue seriously and are committed to taking steps to mitigate bias and set standards for an inclusive culture that maximizes the diversity of our editorial structure, our outreach to potential authors, and the content of our published research. The editors of *Anesthesiology* stand against discrimination and fully support equity, diversity, inclusion, and belonging through our publications.

Article amended with this statement: December 20, 2023

## THE NEGRO AS AN ANESTHETIC RISK \* †

MARY FRANCES POE, M.D.‡

*Memphis, Tennessee*

Received for publication May 26, 1952

THE apparent peculiar liability of the Negro to sudden death under anesthesia (1-4) has prompted a review of the factors which may affect the anesthesia risk in these individuals.

### PSYCHIC FACTORS

The psychic reaction to surgical procedures is largely dependent upon the patient's individual psychology (5)—his past development and his working out of the usual problems of life. Anxiety, fear and disappointment, confusion, conflict and, not infrequently, terror are inevitable by-products of the Negroes' minority status (6). In the psychologic approach to the patient for anesthesia, success depends on harmonious relations with the patient (7). No real rapport can be established with the Negro patient (8). He acts as he is expected to act and not as he really feels. Outer subservience, which often masks inner rebellion, leads to ready agreement with the white person to whom he is talking. His inarticulateness and inability to introspect and to analyze ideas and emotions are additional barriers. It is not surprising that a "fear syndrome in the Negro" has been described (9). Psychic trauma may produce a shock-like state as a result of bombardment of the neuromuscular apparatus with nervous impulses (10). The psychic shock reaction, a condition closely related to traumatic neurosis (5), produces symptoms of general irritability and cardiac and respiratory distress, with vasomotor and secretory disturbances. The Negro's primitive reaction to life accounts for the high proportion of wounds of violence in this race. His tendency to procrastinate and to delay in seeking medical treatment for any disease which does not involve pain is a fundamental factor in the mortality of various surgical diseases.

\* Department of Anesthesiology, Division of Surgery, University of Tennessee, College of Medicine.

† Read at meeting of Southern Society of Anesthesiologists, New Orleans, Louisiana, April 11, 1952.

‡ Assistant Professor and Head of Department of Anesthesiology, Division of Surgery, University of Tennessee, College of Medicine.

## PHYSICAL FACTORS

A racial peculiarity in regard to the mesodermal structures of the Negro seems a reasonable explanation of his susceptibilities and reactions to disease. It also explains the Negro's relative immunity to ectodermal epithelial and nervous system involvement (11).

There is a quantitative difference in the blood pressure reaction to a standard vasomotor stimulus in the white and Negro races (12, 13). The Negro more often responds excessively to the cold pressor test. Hyperreactors are believed to possess a hypersensitive vasomotor system which renders them especially liable to the development of essential hypertension (14). It is suggested that an inherent hypersensitivity of the vasomotor nerves and an exaggeration of the usual vasomotor responses are the essential cause of increased peripheral resistance. This is a dominant hereditary characteristic.

In view of the fact that heart disease in the Negro as compared with the white race is of greater incidence, occurs at a younger age, pursues a more rapid course and has a higher mortality rate, the opinion is offered that the cardiovascular system of the Negro is inferior to that of the white race, and is more vulnerable to insult whether this be applied as an infection, a degeneration, a toxemia, or in the form of stress and strain incident to the complexities and modes of modern occidental civilization (15-20).

The course of vascular disease is different in the two races. In the Negro, hypertension frequently is of the most fulminating type, death occurring early from what often appears to be combined insufficiency of heart, kidneys and brain. Coronary artery disease is less prevalent in Negroes (19). Angina pectoris is rare in Negro patients (15, 16, 18). An explanation of the low incidence of coronary occlusion and angina pectoris (11, 18, 19, 20, 21) is based on the following factors: these patients lack the intellectual ability to interpret fully and to describe the sensation of pain. Moreover, the uncomplicated arterial type of heart failure usually occurs in the ambulatory patient. The history of angina pectoris is obscured when the distressing symptoms of myocardial, renal or cerebral failure develop. Another basis for the discrepancy in the occurrence of this syndrome lies in an inherent difference in the sensitivity of the nervous systems of the two races.

That the nervous system of the Negro differs in many respects from that of the white race is supported by much evidence (11). Mochlig (22) is of the opinion that there is a difference in the development of the thyroid in the Negro. Since the thyroid is the important developmental factor of the nervous system, this explains why the Negro reacts somewhat differently. The thyroid also affects the pituitary-adrenal cortex relationship, as the pituitary is of ectodermal origin and is influenced by thyroid action (23). It has been reported (24) that the Negro is less susceptible than the white man to the central effect of atropine.

Another instance of the Negro's peculiarities is the fact that the corium is thicker and better developed than in the white. The Negro sweats more because of the greater vascularity of the corium and because the apocrine sweat glands are more frequent in Negroes than in white persons (11).

#### NUTRITIONAL STATUS

Dietary deficiencies often affect the general condition of the Negro patient. The problems in malnutrition are dependent on the damage that various systems or parenchymatous organs of the body have suffered (25). The usual response to trauma is diminished or lacking (26, 27). The effects of inadequate nutrition which decrease a patient's capacity to withstand trauma involve changes in the cardiovascular system, fluid metabolism, endocrine, glands, gastrointestinal system and the liver.

The metabolic rate is lowered. The plasma volume is diminished and poor tolerance for postural changes develops. Anemia is frequent (28). Vitamins, in close association with hormones, affect the intermediary metabolism of carbohydrates, fats and proteins, antibody formation, tissue repair, and the pituitary-adrenal response to stress and hepatic function, including prothrombin formation.

The liver occupies a commanding position in the preservation of body homeostasis under normal conditions and in stress. The importance of dietary intake in protecting this organ from damage by noxious agents and in permitting rapid regeneration is well known.

The relationships between nutrition and tolerance for anesthesia deserve further study. Malnourished animals exhibit increased sensitivity to such drugs as morphine, ether and barbiturates. Only minimal amounts are necessary for profound anesthesia and several animals failed to recover from the anesthetic (26).

#### COMMENT

The sharp difference between the mortality rates in white and Negro subjects has been noted by many observers (1-4, 29, 30). There are several explanations. It has been said that the Negro is particularly susceptible to apprehension, fright and panic. The physiologic symptoms which accompany the state of anxiety interfere with the anesthesia management in these patients. Negroes as compared with the white race exhibit important differences in their cardiovascular systems. The prevalence of heart disease is notorious, the main causes being arteriosclerosis, hypertension and syphilis. There is a difference in temperament and reaction in the two races. The vasomotor mechanism of the Negro more often is hypersensitive. Developmental differences involving the thyroid's influence on the brain and nervous system account for unique reactions to anesthesia. Variations in

pituitary-adrenal action and in fat metabolism occur. Dietary deficiencies are responsible for altered reactions to trauma and increased sensitivity to depressant drugs.

Anoxia is a factor of grave importance (10). Those patients who exhibit relative anoxia prior to operation, no matter what the cause, are operative risks. This is because the anoxia already existent is made worse by addition of other types of anoxia through use of pre-operative medication and anesthesia, and through shock due to various causes such as psychic trauma or surgical trauma secondary to operation. The general signs and symptoms of anoxia are obscured by anesthesia (31). In dark-skinned patients cyanosis may not be readily detected (2, 32). The many shades of black in Negroes add to the difficulty of judging changes in color.

#### CONCLUSION

The problem, then, is one of handling a heavily pigmented, panicky patient who often is obese and anemic, who has myocardial damage, liver damage, hypoproteinemia, electrolyte imbalance and deficiency in minerals. His tolerance for anesthetic drugs is decreased, his reactions to stress are diminished, his vasomotor mechanism is unstable. These patients are poor risks. As the causes of death under anesthesia are understood, prevention will be possible in some of the cases.

#### REFERENCES

1. Gregory, J. E.: The Pathology of Sudden and Unexpected Death Under Anesthesia, *Anesthesiology* 10: 105-108 (Jan.) 1949.
2. Dill, W. W.: Racial Reaction to Anesthesia, *Anesth. and Analg.* 27: 298-299 (Sept.-Oct.) 1948.
3. Veal, J. R., and Van Werden, B. deK.: Mortality of Spinal Analgesia Based on an Analysis of 30 Immediate Fatalities in Series of 33,811 Cases, *Am. J. Surg.* 34: 606-610 (Dec.) 1936.
4. Trent, J. C., and Gaster, E.: Anesthetic Deaths in 54,128 Consecutive Cases, *Ann. Surg.* 119: 954-958 (June) 1944.
5. Deutsch, H.: Some Psychoanalytic Observations in Surgery, *Psychosom. Med.* 4: 105-115 (Jan.) 1942.
6. Cooper, R. L.: Frustrations of Being a Member of Minority Group; What Does it Do to Individual and His Relationships with Other People? *Ment. Hyg.* 29: 189-195 (April) 1945.
7. Meehling, G. S.: Psychologic Approach to Patient for Anesthesia, *South. M. J.* 35: 83-84 (Jan.) 1942.
8. Heyman, D.: Manifestations of Psychoneurosis in Negroes, *Ment. Hyg.* 29: 231-235 (April) 1945.
9. Case Report 51, A.S.A. News Letter 11: 10 (Oct.) 1947.
10. Turner, F. P., and Wilkinson, F. A. H.: Operating Room Deaths; Study of 23 Consecutive Cases in Which Autopsies were Performed, *Am. J. Surg.* 57: 242-252 (Aug.) 1942.
11. Moehlig, R. C.: Mesoderm of Negro, *Am. J. Phys. Anthropol.* 22: 297-314 (Jan.-March) 1937.
12. Hartnett, W. G., and Ratcliffe, H. E.: Study of Hypertension on Southern Negroes, *South. M. J.* 41: 847-848 (Sept.) 1943.
13. Schwab, E. H.; Curb, D. L.; Matthews, J. L., and Schulze, V. E.: Blood Pressure Response to Standard Stimulus in White and Negro Races, *Proc. Soc. Exper. Biol. & Med.* 32: 583-585 (Jan.) 1935.

14. Best, Charles H., and Taylor, Norman B.: *The Physiological Basis of Medical Practice. A University of Toronto Text in Applied Physiology*, ed. 4, Baltimore, Williams & Wilkins Company, 1945, pp. 134-135.
15. Laws, C. L.: Etiology of Heart Disease in Whites and Negroes in Tennessee, *Am. Heart J.* 8: 608-615 (June) 1933.
16. Weiss, M. M., and Prusmack, J. J.: Essential Hypertension in Negro, *Am. J. M. Sc.*, 195: 510-516 (April) 1938.
17. Schwab, E. H., and Schulze, V. E.: Incidence of Heart Disease and Etiological Types in Southern Dispensary, *Am. Heart J.*, 7: 223-234 (Dec.) 1931.
18. Schwab, E. H., and Schulze, V. E.: Heart Disease in American Negro of the South, *Am. Heart J.* 7: 710-717 (Aug.) 1932.
19. Ashman, R.: Electrocardiographic Study of Caucasians and Negroes, *Tri-State M. J.*, 13: 2686, (Feb.) 1941.
20. Saunders, G. M., and Bancroft, H.: Blood Pressure Studies on Negro and White Men and Women Living in Virgin Islands of United States, *Am. Heart J.* 23: 410-423 (March) 1942.
21. Burch, G. E., and Voorhies, N. W.: Study of Incidence of Coronary Occlusion and Angina Pectoris in White and Negro Races, *Am. J. M. Sc.* 198: 685-691 (Nov.) 1939.
22. Moehtlig, R. C.: Personal communication to the author.
23. Moehtlig, R. C.: Endocrinology as Related to Embryology; The Selective Action of Endocrine Secretions for Certain Tissues, Department of Medicine, Harper Hospital, Detroit, Michigan, 1950.
24. Paskind, H. A.: Some Differences in Response to Atropine in White and Colored Races, *J. Lab. & Clin. Med.* 7: 104 (1921).
25. McNeal, A.: Problem for Anesthesiologist in Dealing with Malnourished Patient, *South. Surgeon* 13: 99-110 (Feb.) 1947.
26. Hardy, J. D.: Surgery and the Endocrine System; Physiologic Response to Surgical Trauma—Operative Management of Endocrine Dysfunction, Philadelphia, W. B. Saunders Co., 1952, Chap. 3.
27. Hardy, J. D.: Some Physiologic Aspects of Surgical Trauma, Harrison Department of Surgical Research, University of Pennsylvania, Philadelphia, Army Project DA-49-007-MD-84, Final Report (Sept. 30), 1951.
28. Abbott, W. F., and Adamson, J. D.: Chronic Chlorosis as Operation Hazard (Analysis of 300 Hysterectomies), *Canad. M. A. J.* 47: 201-204 (Sept.) 1942.
29. Parsons, W. H., and Williams, W. T.: Surgical Problems in Aged Negro, *South Surgeon* 16: 1163 (1950).
30. Kahle, H. R.: Surgical Peculiarities of Southern Negro, *Tri-State M. J.*, 13: 2683 (Feb.) 1941.
31. Allen, C. R.; Echols, R. S.; Hoefflich, E. A.; O'Neal, K. C., and Slocum, H. C.: Variations in Signs of Acute Oxygen Want During Anesthesia, *Anesthesiology*, 8: 601-614 (Nov.) 1947.
32. Case Report 19, A.S.A. News Letter 9: 3 (March) 1945.