

The second point is that no mention is made of the benign polyps identified as a result of this screening. The ideal result of a screening program like this would be to identify all of the colon neoplasms before they became malignant or invasive, and no mention was made of these findings in this report. Only by reporting the number of benign polyps identified and removed can the results of a screening trial such as this be considered complete.¹

DENNIS L. FOWLER, MD
STEPHEN E. HEDBERG, MD
Massachusetts General Hospital
Boston

1. Teague RH, Thornton JR, Manning AP, et al: Colonoscopy for investigation of unexplained rectal bleeding. *Lancet* 1978;2:1350-1351.

2. Tedesco FJ, Waye JD, Raskin JB, et al: Colonoscopic evaluation of rectal bleeding. *Ann Intern Med* 1978; 89:907-909.

3. Gilbertsen VA, Williams SE, Schuman L, et al: Colonoscopy in the detection of carcinoma of the intestine. *Surg Gynecol Obstet* 1979;149:877-878.

4. Fowler DL, Hedberg SE: Followup colonoscopy after polypectomy. Read before the American Society of Gastroenterologists Scientific Session, Salt Lake City, May 21, 1980.

In Reply.—I wish to thank Dr Gregor for his interest in our article. His report on 33 of 34 colorectal cancer patients with positive results on Hemoccult slide tests is an impressive record for the high-roughage diet. The problem in most screening populations is one of compliance. We requested that patients submit four specimens for occult blood testing, yet seven of 16 patients, six of them symptomatic, submitted one or none. Adherence to a strict dietary regimen probably would have been still poorer. The most impressive aspect of Gregor's series is the patient compliance he was able to obtain.

I concur with the statement that bowel symptoms in the colorectal cancer age group are the rule. For that reason I cannot agree that Hemoccult slide testing is not indicated in symptomatic patients. The high yield of cancers in patients with positive results on Hemoccult slide tests should prompt further investigation in the case with guaiac-positive stools whose symptoms might otherwise be overlooked.

The question of colonoscopy raised by Drs Fowler and Hedberg is somewhat beyond the purview of a screening study. We did find 12 adenomatous polyps among the 120 patients with positive results on Hemoccult slide tests. Other benign lower intestinal tract lesions, principally internal hemorrhoids, were identified as the probable bleeding source in 28 patients, while upper gastrointestinal tract disease was thought to be the

cause of bleeding in an additional 28 patients. No bleeding site was identified in 43 patients. We found nine colorectal carcinomas among the 120 patients with positive findings on Hemoccult slide tests, hence the 7.5% detection yield. Obviously, we do not know how many cancers we failed to find, and some carcinomas may have gone undetected. We have no argument with the conclusions of Teague et al and Tedesco et al that colonoscopy is indicated in bleeding patients with negative findings on barium studies. Despite the report by Gilbertsen et al, barium enema examination has yet to be replaced as the standard secondary screening procedure by the much more costly colonoscopy. The detection rate in the colonoscopy series of Gilbertsen et al of 8.4% (72 carcinomas in 860 patients with occult blood) is comparable to our own.

The issue of whether benign polyps should be considered premalignant lesions is one of the great controversies in medicine. While I have no argument with the colonoscopic removal of such lesions, I suspect no new light will be shed on this question by my entering into the debate with Fowler and Hedberg.

JOHN E. KURNICK, MD
Long Beach, Calif

Cortical Blindness and Tourniquet Subclavian Steal

To the Editor.—The development of cardiorespiratory crisis in a young girl after tourniquet release on the left arm and the resulting cortical blindness merit further comment. Both the consultants' analyses (1980; 243:1187) and subsequent comments (1980;244:1319) neglect the more plausible hemodynamic mechanism—subclavian steal caused by reflex hyperemia. The author of the original query, E. Stecki, MD, has been kind enough to provide me with further detail surrounding the case presented that was correct in essence. It is my belief that the brainstem and occipital cortical ischemia resulted from subclavian steal precipitated by the release of the tourniquet on the left arm.

Consider the following data that support this position: (1) cortical blindness has been reported caused by subclavian steal in a girl with Blalock's procedure¹; (2) arm hyperemia after tourniquet release can substantially reduce the measured vertebral artery blood flow in the adult²; and (3) the same basic symptom response has been reproduced by tourniquet release in a female adult³ with reduc-

tion of the ocular pulses and flattening of the EEG. This patient had a normal four-vessel angiogram except for minimal stenosis of the left subclavian artery. Tourniquet release on the left arm resulted within seconds in the loss of memory, dimming of vision, the inability to speak, ataxia, blepharospasm, periodic respiration, and dysphasia. Fortunately, the entire response is reproducible and has been captured on videotape.

The use of arm tourniquet ischemia is common, and vulnerability to tourniquet release may be increased in the child, in the dehydrated, on the side of the dominant vertebral artery, and in the presence of residual hemangioma, which may result in a more profound hyperemic response than ordinarily observed in the normal limb. The cited cases and the physiology involved have been discussed elsewhere³ in greater detail.

ANDREW L. CARNEY, MD
EVELYN M. ANDERSON, MD
La Grange, Ill

1. Naito H, Kurokawa K, Kanno T, et al: Status epilepticus and cortical blindness due to subclavian steal syndrome in a girl with Blalock's operation. *Surg Neurol* 1973;1:46-49.

2. Magaard F, Ekstrom S: The influence of arm ischemia and arm hyperemia on subclavian and vertebral artery blood flow in patients with occlusive disease of the subclavian artery and the brachiocephalic trunk. *Scand J Thor Cardiovasc Surg* 1975;9:240-249.

3. Carney AL, Anderson EM: Tourniquet subclavian steal. In Carney AL, Anderson EM (eds): *Diagnosis and Treatment of Brain Ischemia*. New York, Raven Press, 1981.

Aspirin and Recurrent Myocardial Infarction

To the Editor.—The COMMENTARY by Richard J. Jones, MD (1980;244:667), summarizes the clinical trials of aspirin in patients with myocardial infarction. Jones indicates the possibility that in the Aspirin Myocardial Infarction Study (AMIS) the excess number of patients in the aspirin group with congestive heart failure, history of angina pectoris, and history of cardiac arrhythmias at baseline may have masked a significant effect in favor of aspirin. The data suggest that this is not the case. As was noted by Jones, statistical corrections for the imbalances did not alter the conclusions. In addition, among patients with none of these three baseline characteristics, total mortality was 8% in the aspirin group (n=1,050) and 6.4% in the placebo group (n=1,160).

Thus, it appears that the indicated baseline imbalance between groups is not responsible for the observed lack of benefit from aspirin.

WILLIAM F. KROLL, PhD
Aspirin Myocardial
Infarction Study
Baltimore

tive means of reducing pyrexia is by securing evaporation of water from the skin. Evaporation carries away 0.59 calories of heat per gram while the melting of ice takes away only 0.08 calories per gram."

These observations on the superiority of evaporation over conduction were earlier noted in an article by Earl C. Elkins¹ in the section on "Heat Stroke."

In our centers the nude patient was placed on a table with a web or rattan top that allowed the circulation of air under his body. He was sprayed with water at room temperature, while large electric fans were played over his body.

We found this routine pioneered by the British to be most effective.

In an area where temperatures, day and night, never got below 48.3 °C (119 °F) for a month, people in reasonable health kept alive by the evaporation of gallons of perspiration from their skin and by drinking prodigious quantities of water. The average person passed a small amount of concentrated urine once per day.

Heat stroke was often experienced by persons with various types of dermatitis that did not allow their sweat glands to function or by those deprived of adequate fluid intake.

Our therapy simply duplicated nature's method of maintaining our body temperature.

Packing a patient in ice is certainly an appealing method. However, the heat loss by conduction is minimal and the resultant water has to reach body temperature, and the surrounding air would be agitated before the maximum result is obtained.

JOHN T. LARKIN, MD
Hampton, Conn

1. Elkins EC. Common emergencies resulting from contact with certain physical agents. *Med Clin North Am* 1938;22:1009-1029.

Neomycin Sensitivity and the MMR Vaccine

To the Editor.—Hypersensitivity to a medication is customarily considered a contraindication to its use. In the case of measles, mumps, and rubella (MMR) vaccine that contains neomycin, the package insert lists hypersensitivity to neomycin as a contraindication to the use of this preparation. Allergy to neomycin is commonly manifested as contact dermatitis and can be proved by patch testing with 20% neomycin in petrolatum or by intradermal testing at a concentration of 1:100.¹ When the concentration for intradermal testing is decreased to 1:1,000, some persons will have a

negative test result. This suggests that the threshold for elicitation of this sensitivity is in the range of 100 to 1,000 µg.

Neomycin allergy occurs in 1.1% of the general population and 5% to 6% of persons with suspected cutaneous allergy.² In the evaluation of suspected neomycin allergy, it is customary to challenge the person with 100 to 1,000 µg of neomycin. The expected result is a standard tuberculin-like reaction at 48 to 72 hours. The entire MMR vaccine injection contains only 25 µg of neomycin, yet the package insert states that this is a contraindication to the use of the vaccine. Since neomycin allergy is usually a delayed type (cell-mediated immune) response, rather than anaphylaxis, the anticipated adverse reaction to 25 µg of neomycin in the MMR vaccine for the neomycin-sensitive patient would be an erythematous, pruritic papule at 48 to 72 hours.

The risk-to-benefit ratio for any given medication must be weighed by the physician in charge. If a history of anaphylactoid reactions to neomycin exists, the prescription against use of MMR vaccine seems reasonable, but this is seldom the case. The anticipated local reaction to MMR vaccine should be weighed against the potential benefit of immunization. Such local reactions can often be treated with topically administered corticosteroid preparations and are transient in nature.

ROBERT L. RIETSCHEL, MD
Emory School of Medicine
ROGER BERNIER, PhD
Center for Disease Control
Atlanta

1. Fisher AA: *Contact Dermatitis*. Philadelphia, Lea & Febiger, 1973, p 50.

2. Prystowsky SD, Allen AM, Smith RW, et al: Allergic contact hypersensitivity to nickel, neomycin, ethylenediamine, and benzocaine. *Arch Dermatol* 1979; 115:959-962.

Colorectal Cancer Detection

To the Editor.—Kurnick et al (1980; 243:2056) reported that in 16 cases of colorectal cancer, six patients had negative results on guaiac-impregnated filter paper (Hemoccult) test for occult blood in stool specimens. The following was the author's conclusion: "stool testing for occult blood will not detect all colonic neoplasms." Every hospital-based series that I am familiar with has found some false-negatives. However, the number of symptomatic patients in such a survey prohibits (as well it should) specifying the recommended high-roughage (foods such as bran and peanuts) test diet. In my own series (employing the high-roughage diet), in 34 consecutive cases of colorectal

cancer, only one had negative results on the Hemoccult slide test (an adenomatous polyp containing some malignant cells).

My contentions are as follows: (1) Hemoccult slide testing is not indicated in symptomatic patients except to add corroborative evidence, (2) Hemoccult slide test screening is more than 90% reliable provided the high-roughage diet is employed and the test period covers at least three days.

I agree that many cases detected using the Hemoccult slide method prove to be symptomatic once a careful history is taken. However, the problem is that in the colorectal cancer age group, bowel symptoms are the rule rather than the exception.

DAVID H. GREGOR, MD
Columbus, Ohio

To the Editor.—In a recent article Kurnick et al report a 7.5% incidence of carcinoma in patients who had positive results on Hemoccult slide tests used as a screening technique. However, to use that percentage as the endpoint in evaluating their screening program seems invalid for two reasons. First, no mention is made of the use of colonoscopy to examine these patients with blood in their stools. Two reports have documented that after normal findings at barium enema examination, a source of blood loss can be identified at the time of colonoscopy in about 20% of patients with occult blood and more than 40% of patients with frank blood in their stools.^{1,2} Depending on the series, 25% to 30% of these lesions were carcinoma. The incidence of false-negative barium enema results is so great that Gilbertsen et al¹ use colonoscopy as the first diagnostic procedure in these patients and obtain a barium enema examination only when colonoscopy is incomplete.

In their series of patients with positive results on the Hemoccult slide tests, 56 patients had a carcinoma of the colon above the reach of the sigmoidoscope, and 20 of the 56 were undetected by barium enema examination. Of even greater importance is that although the barium enema examination was good at demonstrating ten of 11 Duke's C and D lesions, it was much less accurate in detecting the more often curable Duke's A and B lesions. These were all in asymptomatic patients with positive results on the Hemoccult slide tests and suggest that numerous carcinomas might have been overlooked in the series reported by Kurnick et al.