EDITORIALS

Editor's Note:
Three communications in this issue relate to the subject discussed in Dr. Ross' editorial. These communications may be found on pages 329, 381 and 398.

Polyethylene Emboli: How Many More?

Iatrogenic morbidity is an unpleasant phrase, and an unappealing subject. Yet we name, we discuss, and we publish our errors, with the aim of alerting our colleagues to avoidable hazards. This issue of Chest includes three separate communications dealing with the embolization of intravenous polyethylene catheters, the complications of such emboli, and suggestions for their retrieval (pages 329, 381, 398). The continuing reports on this problem since first described in 1954 indicate that unfortunately we have not benefited sufficiently from earlier warnings.

Loss of a plastic tube in the circulatory system must be considered avoidable. The necessary precautions have been outlined before, and are reviewed by Bernhardt, Wegner and Mendenhall (page 329). Perhaps we must again consider our indications for the use of a cannula in place of a needle, and the type of cannula to be employed when one is indeed necessary.

A sampling of comments on this subject was obtained from the staff of the United States Army Hospital, Heidelberg, Germany. This group represents a cross-section of individuals, most having recently come from civilian residencies or practice. Thirteen physicians with primary in-patient responsibilities and two nurse-anesthetists were asked about their use of, and problems with, various intravenous catheters. The most striking "revelation" was that 12 of the 15 individuals knew of one or more unreported cases of polyethylene embolization! It is impossible to estimate the actual frequency of such an event, but it would seem to be of previously unrecognized magnitude.

Most physicians queried preferred a cannula to a needle when blood replacement was necessary or anticipated. Other frequently described settings for their use included expectation of prolonged parenteral therapy (especially in patients with "difficult veins") and in restless or agitated patients. Also cited were special requirements such as central venous pressure monitoring and a route for administering drugs known to be irritating and conducive to chemical phlebitis. Furthermore it was stated that catheters are generally convenient since their use reduces the number of subsequent venipunctures necessitated by infiltration. The morbidity described in the following pages argues forcefully for discontinuing the use of a potentially hazardous device as a convenience.

Several models of intravenous cannulas, comprising two general types are in routine use. In the "catheter in needle" type, the tubing itself is longer, and the needle, after being withdrawn, remains on the external portion of the apparatus. In the "needle in catheter" type, after the tubing is inserted, the needle is discarded. The two types enjoy approximately equal use at this hospital. But any given individual seems likely to employ the one of his choice almost exclusively, often the one first encountered during his training period, and he considers it to be the "easier" one to handle. Not all physicians, however, know of the ready availability of several different models. Significantly, no one cited an instance of embolization from the "needle in catheter" style.

It is a dramatic and educational exercise to experiment with these various products at one's desk. The potential for lacerating and shearing an inner catheter, or separating tubing from adapter, can be readily assessed. This procedure is strongly recommended in view of the dissimilarity among the various products.

The choice of equipment for intravenous therapy must, of course, continue to be individualized. Guidelines, however, might be considered, and would start with a simple, safe, disposable needle.
whenever it will satisfy the requirement. It is true that cannulas are almost indispensable in some settings, but their liabilities must be acknowledged. (The problem of infection is not discussed here, but appropriate prophylactic techniques have been described elsewhere). The “needle in catheter” type is not disposed toward amputation and embolization of tubing. Its safety, at least in this regard, recommends its use when an intravenous cannula is required. Certain situations do, however, require longer catheters advanced to large or central veins. If one is to be introduced percutaneously by one of the commercial “catheter in needle” sets, strict adherence to the safety precautions is mandatory. Finally, we again appeal to the ingenuity of the various manufacturers to design a more hazard-free apparatus.

Allan M. Ross, Major, MC, USA

References

Reprint requests: Major Ross, Cardiology Clinic, 130th Station Hospital, APO New York, New York 09102

Human Longevity

In 1799, Easton1 published anecdotes of 1,712 deceased persons who had lived at least 100 years. This report covered a period of 1733 years from 66 AD to 1799.

The author enumerates several factors attributing to the longevity of these individuals. Interestingly, these are the same factors listed today by national and international health organizations.

In the 18th century, of every 100 persons born, 50 died before the tenth year; 20 between the 10th and 20th years; ten between the 20th and 30th years; six between the 30th and 40th years; five between the 40th and 50th years; and three before the age of 60. In spite of this high mortality, several individuals lived beyond 100 years.

To understand longevity better, man has continued to seek the reasons for individual long survival. Once the reasons are recognized, it is incomprehensible why man must continually challenge the observations of our learned forefathers, as well as the documented evidence of our present-day investigators by continually demonstrating disrespect for the risk factors involved.

Seneca, (4 BC–65 AD), noted “Life is long if you know how to use it.” Easton’s observations complement Seneca’s words. “The varieties of climate, and mode of living, make but little difference, as to the period of our existence. It being nearly the same with the European, as with the Negro; it will, however, be seen, by the perusal of the following sheets, that the more a man follows nature, and is obedient to her laws, the longer he will live, and that the further he deviates from these, the shorter will be his existence.”

“It is not the rich and the great, not those who depend on medicines, who become old; but such as use much exercise, are exposed to the fresh air, and whose food is plain and moderate, as farmers, gardeners, fishermen, labourers, soldiers; and such men, as perhaps never employed their thoughts on the means which have been used to promote longevity. It is amongst these people, chiefly, that the most astonishing instances of it are to be observed. Sometimes, in these situations, man still attains to the amazing age of 150 years, and upwards. And here I cannot deny myself the pleasure of giving a more particular account of some of these instances for, in cases of this kind, the most trifling circumstance is often interesting, and may be of importance.”

“Fresh air is more immediately necessary to life than food... and longevity is more frequently found in the country where the air is pure, rather than in the cities where the air is polluted.”

“From the light history affords us... there is much reason to believe... that healthy, long-lived parents would commonly transmit the same blessings to their children were it not for the excesses of meat, tobacco, drink, and lack of exercise which so evidently tends to the abbreviation of human life.”

“In the first half of man’s age, an active, even a fatiguing life, is conducive to longevity... no instance can be found of an idler having attained a remarkable great age.”

The singular case of Thomas Parr who died in 1635 at the age of 152 years is worthy of reproduction. The postmortem examination was performed by William Harvey, author of De Matu Cordis (1628).

“Of Winnington, Shropshire, a poor countryman, at the age of 38, married his first wife, by whom