

I am inclined to think that the satisfactory outcome was in part due to the character of the fluid employed. Dr. Harvey Cushing has called attention to the fact that a solution containing 0.6 per cent. of sodium chlorid, that commonly employed, should not be regarded as a normal physiologic salt solution. He says:

As a matter of fact, this is a most misleading designation, if we mean to imply by the term a fluid which is isotonic with the body fluids, and thus one that may be used with impunity in large amounts to replace directly in the circulatory system the loss of normal blood serum. A 0.6 per cent. salt solution is, in the first place, sufficiently hypotonic to take the corpuscles perceptibly if used in sufficient quantity and, furthermore, the recent observations of Loeb and his pupils have demonstrated the actual coxicity toward cellular activities of the pure sodium chlorid solution, that is to say, when uncombined with other salts. . . . Sidney Ringer, years ago, through an accidental observation, discovered the fact that minute doses of calcium and of potassium salts, when used in combination with the usual percentage of the sodium salt, made a solution possessing a much more beneficial effect in conserving the activity of an isolated heart than the sodium solution when used alone. Thus, for the first time, was pointed out the antagonizing action of small amounts of calcium and potassium toward the toxicity possessed by the single sodium ion, and thereby was given the first indication of the necessity of combining salines in order to obtain a more perfect infusion solution. . . .

There can be no doubt that the pure sodium chlorid solution alone may, in certain ways, be injurious from its toxic effects; that, furthermore, a solution of the single salt, as weak as the 0.6 per cent. commonly employed, has a hemolytic effect on the red corpuscles. The desirability, therefore, of administering a fluid which shall be as nearly as possible isotonic with the blood—that is, shall have a molecular concentration corresponding to that of the liquor sanguinis—is evident.—*Jour. A. M. A.*

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