LEAD POISONING IN INFANTS AND CHILDREN

Based upon
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by

Manfred Bowditch
Director of Health and Safety
Lead Industries Association
60 East 42nd Street [illegible], New York 17, N.Y.

Introduction

The Lead Industries Association is acutely aware of the problem of lead poisoning in infants and children. We know that it is an important problem, but have as yet to determine the degree of its importance. It is being attacked from every angle that gives promise of worthwhile results, each of which will be briefly noted hereinafter. While prevention is the ultimate goal, evaluation of the problem is essential to an informed preventive program and treatment enters the arena only when prevention has failed. Evaluation, Prevention and Therapy are therefore the main headings in what follows, and because a number of the activities mentioned are still in their infancy and few have reached completion, this statement should be regarded as in the nature of a progress report.

EVALUATION

The three main factors to be considered in an evaluation of the problem are its causation, its extent in epidemiological terms, and the severity of the disease in terms of prognosis.

Causation Although sporadic outbreaks of plumbism caused by the burning of lead-impregnated storage battery boxes as fuel still occasionally occur, the field studies sponsored by our Association in Boston and Baltimore indicate that the main cause of the disease in infants and children is the ingestion of lead paints (a) in the form of flaked and peeling coatings or painted plaster, and (b) from children's furniture and toys repainted in the home. Virtually all reported cases occur in the slum areas of our cities.

Epidemiology No over-all statistics of any value are available. Nothing short of a long and costly campaign of enlightenment can bring any substantial change in this situation, to which ignorance, apathy, misdiagnosis and the fact that lead poisoning is not a reportable disease are all contributing factors. Figures received from eight major cities for the year 1952 ranged from 0.6 to 7.2 cases per 100,000 population and are too obviously inaccurate to warrant quotation here. Estimates, and they are no more than guesses, have varied from one to four thousand cases per annum for the country as a whole, with percentage of mortality from twenty to thirty.

Prognosis The relative frequency of encephalitic symptoms is a grave feature of the childhood form of the disease. A long-term end result study at the Children's Medical Center in Boston, supported in part by our Association, should eventually clarify this aspect of the problem. It is to be hoped that one or another of the newer forms of therapy mentioned hereinafter may be of benefit in this connection.

PREVENTION

Legislation and regulation, standardization of preventive and diagnostic techniques, and educational propaganda all fall within this category.

Legislation and Regulation The futility of the "There Ought to be a Law" approach to this problem was well illustrated by the so-called Maryland Toxic Finishes Law[1], enacted in 1949 and repealed as uninforcible at a special legislative session in 1950. The 1951 regulation of the Baltimore City Health Department[2], prohibiting the use of lead paints on the interiors of dwellings in that city, has been on the books for too short a time to enable a fair estimation of its value. Since the great majority of childhood lead poisoning cases appear to be caused by paints applied many years ago in tenements which may never be repainted, no immediate preventive effect seems likely from any such ordinance. Furthermore, the present-day costs of lead paints virtually preclude their use where protection from the weather is not a factor.

Standardization A proposal of seeming preventive importance is that of establishing standards for the labeling of paints as "safe" for use in refinishing children's furniture and toys. Our Association has agreed to sponsor a project to that end currently under consideration by the American Standards Association. In the diagnosis of plumbism, the principal need of standardization is with regard to clinical laboratory facilities and techniques. Though nothing approaching a country-wide survey has yet been possible, it can be said that these vary from excellent in Cincinnati to utterly inadequate in New York City. It is to be hoped that pressure being exerted toward improvement in the latter center will be as successful as it has been elsewhere.

Education The groups in which an understanding of this problem is most essential are obviously the manufacturers of children's furniture and toys, parents and potential parents, landlords and home owners, and the medical profession. As a result of co-operation between the furniture, toy and paint associations and our own, it can be said that virtually no products designed for children's use are today coated with lead paints as they come from the producer. While some of the Baltimore activities seem open to criticism, parental education by such publications and broadcasts as are employed there should in the main be encouraged, and it is to be regretted that efforts to persuade child organizations and insurance interests to use similar publicity have thus far met with little success. While landlords and home owners should be made aware of this problem, the economic factor cited at the close of the paragraph on Legislation and Regulation is an increasingly controlling factor here.

Because the basic facts of the etiology and diagnosis of lead poisoning receive but scant attention in many of our medical schools, there is widespread ignorance and misinformation concerning this disease in the medical profession. As one means of overcoming this, our Association has held a number of conferences on lead hygiene and distributes its own publications[3,4] and certain ones of the American Public Health Association[5,6] to physicians without charge or for a nominal fee. Another activity to this end will be our exhibit on Childhood Plumbism at the annual meeting of the American Medical Association in June of this year, and a further

one of major importance, currently under active consideration, is a colored sound motion picture on the etiology and diagnosis of lead poisoning planned for distribution through the American Medical Assocation to medical schools and societies throughout the country.

THERAPY

Our Association has for years given financial and other support to research projects designed to bring about better medical and public understanding of the problems of plumbism, both in children and in adults, and improvement in methods of treatment has been a major factor in these efforts. Of principal importance have been the following.

The Boston Study Evaluation of methods of treatment has gone hand in hand with the considerations of causation and end results referred to above in a long-term study of childhood plumbism at the Children's Medical Center in Boston. An interim report[7] of this work is currently being prepared for publication.

The Baltimore Study While an evaluation of the over-all problem is the principal purpose of an intensive one-year study of lead poisoning in children under way at The Johns Hopkins Hospital in Baltimore, both the older and newer methods of treatment are being employed and will be considered in the final report[8] of this undertaking.

Dr. Corwin's Research An arbeit aimed at the evolution of a chemical compound effective in the treatment of lead poisoning has been under way for some years under the guidance of Dr. Alsoph H. Corwin, head of the Department of Chemistry at The Johns Hopkins University. Though Dr. Corwin has recently told us that major difficulties of instability in air have now been overcome, conclusion of the work appears to be not yet in sight.

Ca EDTA A new drug, calcium ethylenediaminetetraacetate, conveniently abbreviated as Ca EDTA, has been under intensive animal and clinical investigation in the last two years. It appears to give great promise in the treatment of plumbism and may well be of particular value in the more severe childhood cases. A protocol[9] issued by our Association, which is serving as a clearing house for information on this subject, is available on request.

Conclusion

There are of course other potential sources of lead absorption to which infants and children may be more or less specifically exposed. Among these are toy casting sets, lead soldiers, children's oil paints in certain colors, and the not yet wholly extinct lead nipple shield. No one of these is, however, of enough apparent importance to warrant discussion in a statement such as this.

References

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7. Randolph K. Byers, M.D. Available on publication from Lead Industries Association.
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