THE EFFECT ON THE EYE OF PREMEDICATION WITH ATROPINE

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SUMMARY

Atropine 0.1 mg/stone (0.016 mg/kg) was administered intramuscularly to 100 patients without ophthalmic disease. Mydriasis was noted in only thirteen patients and rise of intraocular tension in nine. Corneal sensitivity was unchanged. In five glaucomatous patients there was no appreciable change in pupil size or intraocular tension.

The local ocular changes, such as pupillary dilation and altered reaction to light, that occur during the various stages of general anaesthesia are well known. On the other hand, the effect of premedication on the eye has been little studied, and information on the effect of intramuscular atropine on the eye is limited. A short investigation was carried out on the effects of intramuscular atropine on pupil size and intraocular tension.

MATERIALS AND METHODS

Observations were made on 100 patients, in all of whom the eyes were normal in size, reaction of pupil and intraocular tension. Some of these patients were to be operated upon under local or general anaesthesia. Also included were normal healthy patients attending for refraction or for ailments such as chronic conjunctivitis or immature cataract. The size, shape and reaction of pupil to light and intraocular tension were normal. Patients were of both sexes and varied in age from 16 to 60 years.

Atropine was given intramuscularly in a dose of 0.1 mg/stone (0.016 mg/kg approx.). Pupil size, reaction to light, corneal sensitivity and intraocular tension were noted 10 minutes before administration of atropine and then 5, 15, 30, 45 and 60 minutes after injection. In 62 patients it was possible to make these observations up to 60 minutes and in 38 patients these changes were noted up to 30 minutes. Intraocular tension was measured with a Schiotz tonometer with three weights, 5.5 g, 7.5 g and 10 g. Intraocular tension was calculated by reference to Friedenwald's chart. Patients were examined in artificial light and were asked to look at a distance at the time of examination.

RESULTS

There was no change in the size and the reaction of the pupil to light in 87 out of 100 normal patients. In 13 patients there was a slight dilation of the pupil varying from 0 to 2 mm and even in these 13 patients the pupillary reaction to light was quite brisk. There was no change in corneal sensitivity. In 91 patients intraocular tension remained at the same level as before administration of atropine. In 9 patients there was a slight increase in tension varying from 0 to 3 mm Hg. In no patient did the rise exceed 3 mm Hg. Thus in 100 normal patients no appreciable ocular changes were manifest after atropine given intramuscularly in this dose.

In 5 glaucomatous patients no changes were observed within 2 hours of atropine injection.

DISCUSSION

Statements in standard textbooks on the effects of atropine on the eye are not in agreement. Hale (1955) states that mydriasis and slight rise in tension may be expected. On the other hand, Edmunds and Gunn (1941) state that no ocular effects are seen. Leopold and Comroe (1948) gave intramuscular atropine to 8 patients and noted pupillary dilatation in 3 within half an hour. Lengthening of near point occurred in 8 patients. Changes in intraocular tension were not reported.

Anaesthetists have long had some reserve about the possibility of atropine causing pupillary dilatation and intraocular pressure rise and precipitating an attack of glaucoma or aggravating a pre-existing state of glaucoma.

In the present series the absence of marked mydriasis and tension elevation leads to the conclusion that, in this dose, atropine may be used...
with safety in patients over 45 years old and in glaucomatous patients. These results confirm those of Schwartz, de Roeth and Papper (1957) and lend practical support to the view of Rosen (1962) that the weight of the eye is so small as to make it unlikely that a dangerous quantity of atropine will be found in it after intramuscular injection of conventional doses.

ACKNOWLEDGMENTS
We are grateful to Dr. K. N. Udupa for permission to publish, and to Dr. H. S. Lakhtakia and Dr. T. P. Srivastava for their co-operation.

REFERENCES

BOOK REVIEW
The appearance of a second edition of this book so soon after its first publication must be regarded as a measure of its popularity. The pattern of the book is essentially similar to that of the first edition, the early chapters being devoted to an account of the child as a subject for anaesthesia. These include a very well presented section on the respiratory physiology of children by Dr. Charles D. Cooke. These sections, and indeed the whole book, reflect the author's long experience and thoughtful approach to the problems of paediatric anaesthesia, and demonstrate his deep knowledge of the physiology and pathology of children. Anaesthetists and others who deal with sick children will find a great deal of information interestingly presented, which makes this book well worth reading.
The techniques of anaesthesia and the concepts upon which they are based may appear a little foreign to the reader in these islands, as do most of those described in textbooks of anaesthesia which emanate from the United States. It is, however, interesting to observe that amongst the main fundamental differences between the first and the second editions of this book is a change towards what some would call a more tolerant, and others a more enlightened, view of the place of certain drugs in paediatric anaesthesia. In spite of this there still remain very detailed descriptions of the technique of open ether anaesthesia, and of the phenomena associated therewith. This again may be regarded as symptomatic of the differences between anaesthetic teaching on the two sides of the Atlantic, for in the United States great stress is laid upon the necessity to familiarize the trainee with all the known techniques of anaesthesia, whereas in Great Britain the emphasis is upon the teaching of methods to meet satisfactorily the clinical situations which might be encountered.
The book contains chapters on hypotensive techniques and on hypothermia, both of which are sound in their approach, and there are sections on anaesthesia for the special branches of surgery. It is perhaps a little surprising to see a chapter devoted to the child under one year, for one would think that children in the latter parts of their first year of life had more in common with older children as regards physiology, pathology, and pharmacological response than with infants in the early weeks of life, and possibly this could have been emphasized by a chapter devoted solely to the very young child.
The book, as was the first edition, is well produced and well illustrated. It is very readable, and should prove of great value both to practising anaesthetists and trainees. The reader should, however, appreciate that some of the techniques described would be regarded by British paediatric anaesthetists as no longer acceptable!

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