PERPHENAZINE PREMEDICATION FOR BRONCHOSPIROMETRY

BY

S. S. CHATTERJEE AND SHEILA JENNETT

Department of Respiratory Physiology, Baguley Hospital, Manchester, England

It is frequently necessary to undertake investigations entailing some discomfort but requiring the co-operation of a conscious patient. In such circumstances satisfactory premedication is an important factor.

Bronchospirometry is one such investigation. We present here our reasons for finding perphenazine satisfactory as a premedication for patients undergoing this; our findings may suggest its use before other procedures with similar preliminary requirements.

For bronchospirometry we require of the premedication that the patient shall be sedated but co-operative, able to sit up without hypotension, and that his normal respiration shall be disturbed as little as possible. The reasons for these requirements are implicit in the method used.

It is possible to use the traditional morphine and atropine. One of us (S.S.C.) has had experience of its use previously and found it suitable as a sedative; the respiratory depressant action of morphine is, however, a contra-indication, particularly as many of the patients concerned have severely impaired respiratory function. Tranquillizers have therefore been used for our cases.

MATERIAL AND METHODS

One hundred and twenty successful or attempted bronchospirometries are recorded. They were carried out consecutively at this hospital in 1959-60.

The procedure involves the following steps. The operator sits facing the patient, who holds his own tongue forward. The throat and larynx are anaesthetized by spraying with 4 per cent lignocaine and a nasal catheter is passed between the vocal cords for the injection of lignocaine into the trachea. A Carlens tube then has to be passed. For success the patient must breathe smoothly and refrain from gagging. When the tube is in position the patient has to breathe through it into a spirometer for a period of about 5 to 10 minutes.

Premedication was given half to one hour before the procedure; the blood pressure was recorded in the sitting position before it was given, and again before commencing bronchospirometry.

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**FIG. 1**

Chlorpromazine.

Systolic blood pressure before and after premedication with chlorpromazine. Shaded area represents fall of blood pressure.

- Fainting.
- Procedure abandoned.
- Apprehensive.
Perphenazine.
Systolic blood pressure before and after premedication with perphenazine. Shaded area represents fall of blood pressure.

↓ Fainting.
* Procedure abandoned.
A Apprehensive.
In the first series of twenty cases chlorpromazine was used for premedication in a dose of 25 mg intramuscularly. Chlorpromazine was then abandoned on account of many failures associated with hypotension and for the next hundred cases perphenazine was given intramuscularly, in a dose of 10 mg.

RESULTS

The chlorpromazine series.

The results are shown in figure 1. Of twenty consecutive cases, all except two were adequately tranquillized and of the two, only one was seriously apprehensive.

In all except two (90 per cent) there was some fall in systolic blood pressure. This was negligible in two cases (less than 6 mm Hg), slight in three cases (6-10 mm Hg), considerable in thirteen cases (more than 10 mm Hg).

Of the thirteen cases with a considerable fall of blood pressure, eight were too faint for the procedure to be continued. It was completed in the other five but two of them had to lie down throughout.

The remaining seven cases, with little or no fall in blood pressure proceeded without difficulty.

Thus out of the twenty, there were twelve successes and eight failures.

The perphenazine series.

The results are shown in figure 2. Of one hundred consecutive cases, all except three were adequately tranquillized.

In fifty-nine (59 per cent) there was some fall in systolic blood pressure (fig. 2). This was negligible in eight cases, slight in twenty-six cases, considerable in twenty-five cases.

Of the twenty-five cases with a considerable fall of blood pressure, five had to be abandoned on account of severe faintness. In the remaining twenty, bronchospirometry was completed in the sitting position, and only four complained of any faintness or dizziness.

One patient, without any fall of blood pressure, was too apprehensive and subjectively faint for the procedure to be continued.

In the remaining seventy-four patients, with little or no fall of blood pressure, bronchospirometry was accomplished without difficulty.

DISCUSSION

From these two series it is possible to say that both chlorpromazine and perphenazine produced satisfactory tranquilization for this procedure, that hypotension was more frequent and more severe after chlorpromazine than after perphenazine, and that for a given fall in blood pressure there was less subjective complaint with perphenazine than with chlorpromazine. The difference between the two series in respect of considerable fall of blood pressure can be confirmed as highly significant by the $\chi^2$ test.

Applying the same test to the incidence of subjective faintness with a hypotension of more than 10 mm Hg systolic, the difference between the two series falls just short of definite significance, but is at least probably significant. In other words, perphenazine is probably associated with greater subjective tolerance of hypotension than is chlorpromazine.

Perphenazine (Fentazin, Trilafon) has been shown to be less toxic than earlier derivatives of phenothiazine, and effective in smaller dosage (Annesley, 1959; Cahn and Lehmann, 1957; Benson-Harer 1958). The relationship between chlorpromazine, promazine and perphenazine is shown by the structural formulae (fig. 3). They are structurally similar while differing considerably in potency and toxicity.

There are many references to the hypotensive effect of chlorpromazine. It is noted that orthostatic hypotension is liable to occur after intramuscular injection, usually from 30 minutes onwards, that it is often only transitory and rarely causes circulatory collapse (Goldman, 1956; Cohen, 1958; Lear, 1958; Pollack, 1958). There seems to be no direct reference to the degree of hypotension caused by a single small dose such as was given to our first series of twenty patients.

Whilst we confirm that hypotension is a side-effect of chlorpromazine, we have also found it to occur to a lesser degree after perphenazine; other authors have not. In a series of pre-operative administrations (Dobkin, 1959), sedation in labour (Gready et al., 1959), and acute psychoses (Kofman, 1958), where large numbers of patients were given doses of 5 to 25 mg intramuscularly, there was either no significant effect on blood pressure, or an occasional slight fall only reported.

In most of these instances, the figure accepted
as a slight fall was not stated, and here it may be that our criteria differ. A fall in systolic pressure of 10 to 20 mm Hg, perhaps insignificant in other circumstances, may cause faintness sufficient to preclude bronchospirometry.

We have found a 25 per cent incidence of considerable hypotension after perphenazine, as compared with 65 per cent after chlorpromazine, whether directly due to it, or despite it (we have not distinguished the hypotensive effect of the drug from the possible hypotensive effect of apprehension); but we have shown that in the perphenazine series the patients seemed to tolerate their hypotension better than with chlorpromazine.

**SUMMARY**

The efficacy of perphenazine as a premedication before bronchospirometry has been assessed. Compared with chlorpromazine it was equally effective as a tranquilizer and had the advantage of being much less frequently associated with orthostatic hypotension, which can make this procedure impossible.

**ACKNOWLEDGMENTS**

We wish to acknowledge the advice and help of Dr. T. M. Wilson, Medical Superintendent of Baguley Hospital, the consultants whose patients were part of this trial, and Miss Phyllis Whitehorne. Messrs. Allen & Hanburys Ltd. kindly supplied the Fentazin.

**REFERENCES**


