A PRELIMINARY COMMUNICATION ON THE SLEEP-PRODUCING EFFECT
OF INTRAMUSCULAR METHOHEXITONE SODIUM IN THE PAEDIATRIC
PATIENT

BY

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SUMMARY

A new method of using methohexitone is presented. When given by intramuscular
injection in a dose of 3 mg/lb (6.6 mg/kg) it is safe, rapid and pleasant in the intro-
duction of sleep in the paediatric patient. There are apparently no limitations in the
use of intramuscular methohexitone sodium other than those limitations placed on the
use of any barbiturate.

Methohexitone sodium when compared with other
intravenous anaesthetic agents shows a greater
potency and a shorter duration of action (Stoel-
ting, 1957; Gruber et al., 1957; Redish et al.,
1958; Taylor and Stoelting, 1960). Previous clinical
experience revealed that this agent was effective
when given intramuscularly in the production of
hypnosis (Miller and Stoelting, 1961). From this
experience a continuation of the hypnotic effect
of this drug was pursued.

PRESENT STUDY

Paediatric patients undergoing either elective or
emergency surgical procedures were selected for
this study. There were 480 patients in the series.
The ages of the patients ranged from a few hours to
16 years. The weight ranged from 6 lb. 14 oz.
(3.1 kg) to a weight greater than 140 lb. (63.6 kg).

Method of administration.

Three mg of methohexitone sodium per pound
of body weight (6.6 mg/kg) was given in the upper
outer quadrant of one buttock. A single injection
of a 2 per cent solution of methohexitone sodium
in normal saline was used for the intramuscular
injection. Concentrations of 5 per cent and above
were tried and were not effective.

CONDUCT OF ANAESTHESIA

In preparation for the administration of the
general anaesthetic agent, methohexitone sodium
was used as a hypnotic agent for the initial induc-
tion of sleep. The anaesthetic agents and systems
for administration were those used in the usual
paediatric anaesthetic practice.

RESULTS

The onset of sleep was quick and without excita-
tion. If the desired state of sleep had not occurred
within 10 minutes another 3 mg of methohexi-
tone sodium per pound of body weight could be
given. Eleven patients were not asleep at the end
of 10 minutes and only one patient fell in the
15–20 minute group before going to sleep. The
onset of sleep occurred in most patients in the
2, 3, 4 and 5 minute periods. Not all patients
who went to sleep lost the lid reflex. Fifty-seven
patients were awakened by a painful stimulus (such
as starting an intravenous infusion or the injection
of a drug) or upon administration of the anaes-
thetic. Most went back to sleep after a short inter-
val or remained co-operative during the initiation
of the anaesthetic.

The data in table I show that in this series
there is no clearly defined weight group in which
intramuscular methohexitone was more effective.
The same conclusion for age can be made from
the data in table II. The low percentage in the
16-year age group may be a function of a limited
number of patients in this age group.

This study was conducted under the Eli Lilly
Research Grant. The methohexitone sodium was
furnished through the courtesy of the Eli Lilly
Research Laboratories, Indianapolis.
SLEEP-PRODUCING EFFECT OF INTRAMUSCULAR METHOHEXITONE

TABLE I
Total number of patients in each weight division and percentage of total asleep. Data from 462 patients; in 18 patients the weight was not accurately known.

<table>
<thead>
<tr>
<th>Weight in pounds</th>
<th>Total number of patients in each weight division</th>
<th>Percentage asleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>15</td>
<td>73</td>
</tr>
<tr>
<td>10-20</td>
<td>48</td>
<td>89</td>
</tr>
<tr>
<td>20-30</td>
<td>86</td>
<td>89</td>
</tr>
<tr>
<td>30-40</td>
<td>83</td>
<td>88</td>
</tr>
<tr>
<td>40-50</td>
<td>67</td>
<td>88</td>
</tr>
<tr>
<td>50-60</td>
<td>49</td>
<td>86</td>
</tr>
<tr>
<td>60-70</td>
<td>26</td>
<td>85</td>
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<td>70-80</td>
<td>18</td>
<td>89</td>
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<td>80-90</td>
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<tr>
<td>90-100</td>
<td>11</td>
<td>82</td>
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<tr>
<td>100-120</td>
<td>22</td>
<td>73</td>
</tr>
<tr>
<td>120-140</td>
<td>17</td>
<td>76</td>
</tr>
</tbody>
</table>

TABLE II
Percentage of the total patients asleep in each age group.

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Total number of patients in each age group</th>
<th>Percentage asleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>53</td>
<td>87</td>
</tr>
<tr>
<td>1</td>
<td>39</td>
<td>79</td>
</tr>
<tr>
<td>2</td>
<td>48</td>
<td>96</td>
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<td>3</td>
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<td>94</td>
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<td>4</td>
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<td>5</td>
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<td>86</td>
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<td>6</td>
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<td>7</td>
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<td>9</td>
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<td>11</td>
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<td>12</td>
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<td>60</td>
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<td>15</td>
<td>12</td>
<td>83</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
<td>67</td>
</tr>
</tbody>
</table>

Intramuscular methohexitone did not seem to have a marked effect on the pulse rate of those patients responding to the sleep effect of the drug. Clinical observations of the respiratory patterns of the patients going to sleep show a slight decrease in the rate with no marked changes in depth.

Postoperatively 73 per cent of the patients were awake and had active reflexes after cessation of the anaesthetic. Of those still asleep after the cessation of anaesthesia 19 per cent were depressed moderately.

DISCUSSION

The data presented show that intramuscular methohexitone is a safe and rapid method for the introduction of sleep in 85 per cent of pediatric patients. Most patients going to sleep from the effects of intramuscular methohexitone sodium did so in the 2-5 minute period after the injection of the drug. During the induction period there was noted no laryngospasm or muscle twitchings from intramuscular use of the drug. Two instances of hiccoughs occurred, but these subsided with the introduction of the general anaesthetic agent. When given alone for basal narcosis, sleep lasted from 30 to 45 minutes. Following this there was a rapid awakening from the effects of the drug. Since 73 per cent of the patients were awake after the cessation of the general anaesthetic, methohexitone sodium apparently did not prolong the recovery time from the primary anaesthetic in most of the patients.

Before being taken to the operating theatre methohexitone sodium can be given intramuscularly in the patient's room or ward. The apprehensive patient may then be taken to theatre quietly and in a more peaceful state of mind. On several occasions patients seemingly awake at the time of induction had no memory postoperatively of the introduction of the anaesthetic or of the placement of the anaesthetic facepiece. When giving the drug, a source of oxygen and a means of ventilation should be immediately available if needed. The anaesthetist should remain at the patient's side after the drug is given. The drug is versatile and can be used with any anaesthetic agent and for most surgical procedures.

There were two instances of apnoea lasting 5 minutes and one lasting 10 minutes, necessitating ventilation with a bag and facepiece before the return of adequate spontaneous respiration. No severe complications from the intramuscular methohexitone occurred during the maintenance of anaesthesia.

No abscesses or sloughs developed at the site of administration of intramuscular methohexitone sodium in any of the patients during their stay in hospital. Supplementation with a local anaesthetic was necessary for surgery done under basal narcosis. For painful examinations or for painful diagnostic procedures supplementation was necessary.
REFERENCES

BRITISH JOURNAL OF ANAESTHESIA

SOMMAIRE
On presente une nouvelle méthode d’application de la méthohexitone. Injectée par voie intra-musculaire à la dose de 3 mg/lb (6,6 mg/kg), elle constitue un moyen sûr, rapide et agréable pour induire le sommeil chez le malade pédiatrique. L’utilisation de la méthohexitone sodique par voie intra-musculaire ne connaît apparemment aucune limitation en dehors de celles communes à l’emploi de tous les barbituriques.

ZUSAMMENFASSUNG
Eine neue Applikationsmethode für Methohexiton wird dargestellt. Die intramuskuläre Injektion in einer Dosierung von 3 mg/lb (6,6 mg/kg) erzeugt einen sicheren, schnellen und angenehmen Eintritt des Schlafes bei pädiatrischen Patienten. Es gibt offensichtlich keine anderen Beschränkungen für den intramuskulären Gebrauch von Methohexiton Natrium als diejenigen, die mit der Anwendung eines Barbiturats überhaupt verbunden sind.

LATIN-AMERICAN CONFEDERATION OF SOCIETIES OF ANESTHESIOLOGISTS

During the Vlth Latin-American Congress of Anesthesiologists, held in Lima, Peru, last October, delegates from the Societies of Argentina, Brazil, Bolivia, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela founded the Latin-American Confederation of Societies of Anesthesiologists.

The new organization aims to improve the standard of anaesthesia in Latin America through close co-operation of its member societies. It will organize biannual Latin-American Congresses, disseminate scientific information, encourage investigation in anesthesiology and related subjects, establish basic standards for teaching and training, divulge opportunities for scholarships and fellowships, exchange teachers, and stimulate the organization of national anaesthesia societies.

The constitution of the Confederation was approved and registered in Lima, Peru. The first Executive Committee was elected as follows: Zairo E. G. Vieira (Brazil), General Secretary; Augusto Leon Perez (Peru), Chairman; Enrique Barmaimon (Uruguay), Luis Troconis (Venezuela).

The office will be in Rio de Janeiro, Brazil (Avenida Copacabana, 1386/1101), for the two-year period 1963/1964. The VIIth Latin-American Congress of Anesthesiologists will be held in Montevideo, Uruguay, in 1964.