

DEMEROL, PHENERGAN, AND ATARAX PREMEDICATION IN DENTISTRY FOR CHILDREN

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小兒齒科 患者 治療에 있어서 DEMEROL, PHENERGAN, ATARAX 準備投藥에 對한 研究

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.....> 國文抄錄 <.....

著者は 小兒齒科 患者의 一般的인 治療時 흔히 나타나는 過敏性, 不協助, 恐怖感 등의 兒童 取扱上의 難點들을 心理的인 衝擊없이 解消함을 目的으로 Demerol, Phenergan과 Atarax들의 藥劑를 治療前에 準備投藥 함으로써 다음과 같은 結果를 얻었다.

- 1) 一般 小兒科에서 使用되는 藥物用量보다 小兒齒科 外來患者에선 2 倍의 用量에서 滿足스러운 效果를 얻을 수 있었다.
- 2) 用量決定에 있어서 最初 投藥用量을 正確히 算出함으로써 準備投藥의 成功을 가져 올 수 있었다.
- 3) 準備投藥의 成功은 一定한 期間後 患者의 recall appointment時 準備投藥 없이도 보다 나은 協助를 얻을 수 있었다.
- 4) Demerol, Phenergan, Atarax使用에 있어서 그 副作用은 거의 無視할 수 있을 程度로 輕한 것이었으며 患者의 心理的인 弛緩을 갖어 올 수 있어 兒童 取扱上에 큰 效果를 얻을 수 있었다.

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TABLE OF CONTENT

	Page
INTRODUCTION	(552)
REVIEW OF LITERATURE.....	(552)
PATIENT AND METHOD.....	(553)
DRUG AND ADMINISTRATION	(554)
FINDINGS	(555)
TABLE I	(555)
DISCUSSION OF FINDINGS.....	(556)
SUMMARY AND CONCLUSION.....	(557)
BIBLIORAPHY	(558)

INTRODUCTION

The purpose of this study was to ascertain the effectiveness of pre-operative sedation using Demerol in combination with an Ataractic, and to determine the favorable drug combination and optimal dosage in the accomplishment of multiple dental restorations in child patients.

One of the major problems in dentistry for children is child management. Removal of tension and apprehension on the day of dental treatment is an important step in the success of child management and is an essential part in lessening the psychic trauma for patient's future dental procedure and, furthermore, a patient's normal psychological growth.

Premedication has been and is known to be a valuable aid in the solution of this problem. Various drugs have been advocated for this purpose, either singly or in various combinations. Demerol in combination with either Phenergan or Atarax has been popular in pedodontic premedication. Considerable research has been done on the success of these combinations; however, there has been no general acceptance in the dental profession.

REVIEW OF LITERATURE

Since premedication for dental procedure became a newer means of child management, published reports on the use of drugs have indicated different viewpoints. Criteria have not been constant and heavy evaluations of drug action seemed based upon the dentist's subjective reactions. This has led to confusion and the unexpected side effects of drugs and different responses in different patients have enlarged the problem of obtaining effective pre-operative sedation.

In recent years, newer concepts and drugs have been proposed for use in dentistry for children.

Album ⁴⁾ postulated that the premedication in dentistry for children must be considered on the basis fo the individual patient's physical and environmental factors. The traditional criteria of drug dosage calculation of Young's and Clark's rules would no longer be our total determining scale. Higher metabolic rate and child's unstable nervous system require higher drug dosage than proportional adult dosage in child dental patient.

Album also emphasized that the doctor's evaluation of the patient at initial visit is important in determining the drug dosage to achieve successful medication and he also suggested that office medication prior to treatment under the supervision of office personnel has an advantage over the take home medication.

Lampshire ²⁰⁾ developed a classification of type of patient's behavior which may help to determine the initial drug dosages of premedication in dentistry for children. He classified this according to the patient's physical and emotional factors: 1) Tense: tense but cooperative, 2) Outwardly apprehensive: perspire, stall, fuss but eventually accept treatment, 3) Fearful: difficult child, requires understanding, explanation, reassurance, 4) Stubborn and Defiant: annoying, irksome, bold, insolent, aggressive, 5) Hyperemotive (problem): agitate, screaming, fighting, kicking.

Among many drugs, Demerol has been one of the most well known agents to be used for pre operative sedation. Droter ¹⁰⁾ suggested that Demerol administration prior to dental treatment in children seemed ideal because of its analgesic, sedative, and spasmolytic properties along with atropin-like drying effect, and recommended its routine use for long operative procedures.

Sadove ²⁵⁾ and Weiss ²⁷⁾ observed that Phenergan was safe, free from side effect. and produced an excellent degree of sedation without causing mental cloudiness and deep sleepiness. However, if Phenergan is used alone, a much higher dose is required to produce a satisfactory effect; therefore, they suggested the use of a combination with Demerol and Atropin-like agents.

In the combination of Demerol and Phenergan ^{3,7,17)}, the potentiating action of Phenergan doubles the analgesic and sedative action of Demerol so that a lesser amount of narcotic is required to raise the pain threshold to the desired level and the deeper sedation can obviate the use of barbiturates. Reduction of the salivary secretion rate by Demerol and the antiemetic action of Phenergan are additional advantages.

Atarax ⁸⁾ has been employed clinically as a tranquilizing agent for the symptomatic treatment of a wide variety of emotional and mental disorders characterized by anxiety, tension, agitation, etc. It has very low side effects; drowsiness may occur but it is transient and does not produce true sleep. Clinical use of this agent ^{14,19)} has been introduced in dentistry for children, and shows satisfactory results. In combination with Demerol ^{6,16)} results were better than when used alone. Zsigmond, et al ²⁸⁾ with their extensive study with atarax in combination with Demerol concluded that this agent has superior pre-operative tranquilizing action, absence of circulatory and respiratory depression, and uncomplicated and rapid recovery from anesthesia without disorientation and/or vomiting.

PATIENT AND METHOD

This study was conducted in the Pedodontic Cerebral Palsy Dental Clinic of Columbia University, School of Dental and Oral Surgery.

Twelve patients, 9 normal, 2 cerebral palsied, and 1 mentally retarded, 5 male and 7 female, three to fourteen years of age, were included. Nine patients were selected for premedication; those who were judged as difficult in child management, and with relatively extensive dental decay. Three normal cooperative patients were included in order to observe their responses in performing multiple dental restoration without any medication.

All patients underwent the routine initial procedures: history, prophylaxis, full mouth x-ray series. While these procedures were being carried out, during the first and second visits, each patient's behavior was carefully evaluated. When the need for premedication was indicated, the subject was discussed with the parent and it was made certain that there were no medical contra-indications for the patients. Pre-requisite instructions were given to the patient, i. e., not to offer any food to child at least four hours prior to appointment. At this time of initial procedures, also, drug dosages and treatment planning were considered. At succeeding visits, with medication administered one hour prior to start of treatment, multiple restorative procedures were performed.

Observations were made on the patient's emotional responses at the visits, prior to, during, and after medication. Behavioral responses by medication were recorded, and classified into four groups: 1) Marked improvement, 2) Satisfactory improvement, 3) Slight improvement, and 4) No improvement. These were marked + + +, + +, +, O, respectively.

DRUG AND ADMINISTRATION

The main drugs of choice for this study were Demerol (meperidine hydrochloride), with either Phenergan (promethazine hydrochloride), or Atarax (hydroxyzine hydrochloride).

The initial drug dosages were determined by patient's body weight. Demerol was determined on the basis of one milligram per kilogram of body weight and Atarax on the basis of one half milligram per kilogram of body weight, in accordance with usual recommended dosages. Due to the fact that physically and emotionally unstable patients are required larger amount of drug dosages, this initial dosages, were varied according to the patient's behavioral type (Lamshire's classification). If response was unfavorable in case of ineffective dosages, dosages were gradually increased at following visits. One half of initial dosages were added until optimal responses were achieved within the safe margin of each drug. Those additional dosages also varied according to patient's responses to the initial dosages. The combination was changed when patient's response was not improved even with high dosages; when patient was considered satisfactory by one combination of drugs and yet needed further medication at following visits, in order to ascertain which combination was more effective.

All the drugs were given orally in liquid form₂ (elixir or syrup) as soon as pati-

ent arrived at the clinic.

FINDINGS

In the most difficult and handicapped patients, the recommended preoperative medication dosages were ineffective, and they required higher dosages than the recommended usual dosages for achievement of successful child management. These effective doses were approximately two milligram per kilogram of Demerol and one milligram per kilogram of Phenergan or Atarax. Even with these doses, no significant side effect were observed except mild drowsiness and slight dizziness on three occasions with the combination of Demerol and Phenergan.

Unsuccessful premedication resulted in difficult child training and the need for further appointments for medication to achieve favorable responses. Therefore, evaluation of the patient during the initial period is considered most important in determining the proper starting dosage.

Several patients treated were seen on subsequent recall; as a result of the previous rapport with the aid of the medication, they were cooperative and required no further medication.

For younger children, under 6 years old, without medication, long period for multiple operative procedures raised management problems gradually during later visits.

Table I

Pt. No.	Sex	Age Yrs.	Wt. kgm	Type of pt. behavior	Med. diag.	Visit No.	Doses	Side act.	Resp. by med.
1	m	8	45	problem	.....	1	D. 50 P. 25	dizzy	+
						2	D. 50 P. 25		+
						3	D. 50 A. 25		+
2	f	7	20	outwardly apprehensive	.....	1	D. 30 P. 20		+++
						2	D. 20 A. 15		+++
3	f	6 $\frac{1}{2}$	19	tense	.....	1	D. 30 A. 15		+++
4	f	6	21	tense	.....	1	D. 30 A. 15		+++
5	m	3	20	problem	.....	1	D. 30 A. 15		+
							D. 40 A. 20		++
6	m	5	30	problem	.....	1	D. 65 A. 30		++
7	m	7	21	stubborn	mental retard. (slight)	1	D. 25 P. 15	drowsy	0
						2	D. 40 P. 20		0
						3	D. 40 A. 20		++
8	f	14	50	.....	c. p. spastic	1	D. 50 P. 30		0
9	f	10	24	.....	c. p. spastic	1	D. 30 A. 15	drowsy	0
						2	D. 50 P. 30		+
						3	D. 50 A. 30		+

Code for drugs : D: Demerol, P : Phenergan, A: Atarax

Code for patient's responses by medication:

+++ : Marked improvement

++ : Satisfactory improvement

+ : Slight improvement

0 : No improvement

DISCUSSION OF FINDINGS

It became evident that the dosages of drugs for pre-medication in difficult children must be higher than the usual recommended dosages.

Patient No. 5 who was classified as a hyperemotive (problem) had minor carious lesions in upper incisors and upper and lower posteriors. Initial routine procedures had been done without serious problems. At subsequent visits he became almost uncontrollable, and it was decided to premedicate. At the first appointment for premedication, the combination of 25mgm Demerol and 15mgm Atarax was given. There was no improvement; however, both upper primary first molars were treated under restraint. At the second visit, with 40 mgm Demerol and 20mgm Atarax administered, four upper anterior lingual cavities were treated and filled. His response at this time was satisfactory.

Patient No. 6 was also classified as a hyperemotive. He was very bright but it was impossible to get any cooperation at first. With 65 mgm Demerol and 30 mgm Atarax administered, he listened to our explanations and cooperated in the treatment procedures, and an entire quadrant was restored successfully.

On the other hand, Patient No. 1, classified as a hyperemotive, was premedicated in three consecutive appointments with identical dosages that were the usual recommended dosages. He showed only slight improvement throughout, and all the painful procedures were done under heavy restraint.

As a result of the above three cases the author assumes that at 2 mgm Demerol per kilogram and 1 mgm Atarax per kilogram, satisfactory responses would follow.

In most of the cases in the normal group of patients medication was no longer needed after three appointments. However, it was interesting to note that for patient No. 7, slightly mentally retarded, with rampant decay and classified as a stubborn, 25 mgm Demerol and 15 mgm Phenergan was given at first appointment, with no improvement in his responses. At the subsequent appointment, with the dosage increased to Demerol 40 mgm and Phergan 20 mgm, he still reacted in an unfavorable manner, unlike other cases which showed improved responses at second medication appointment. At third appointment, with a combination of 40 mgm Demerol and 20 mgm Atarax, he seemed very calm, cooperated and accepted the fact of his mother's leaving. At this third visit, not only was there an improved response but there was no drowsiness. In the light of this result it confirmed the finding of less side effect with atarax.

Three patients treated with premedication, No. 2, 3, 4, the least disturbed group, had been seen on subsequent recall: as a result of previously established rapport they revealed good behavior and medication was required no longer. This was a good example of one of the objectives of premedication, i. e., to establish the permanent understanding of dental procedures and also to establish the patient's self confidence.

With cerebral palsied patients, due to their organic brain damage, the premedication was unpredictable. The only notable result was that the premedication could effect the patient's emotional tranquility. This fact also been noted by Green¹⁵⁾ who found that handicapped patients need sound application of pedodontic patient management principles rather than heavy medication.

It was observed that management problems, in performing long operative procedure, arised at following visits in the group of non-premedicated Patients. Patient E., $5\frac{1}{2}$ years old female and Patient R., 6 years old male, who had extensive dental caries were treated by doing quadrant dentistry. Duration of treatment at visit was about one hour for each. Their behavior at the early operative visit was excellent. Patient R. once said "I like the needle". However, the group's response in treatment was getting worse visit by visit. Unlike patient D., $7\frac{1}{2}$ years old female, did not show unfavorable response by the similar procedures. Therefore it was considered that for the yonng patient under 6 years of age, the long operative procedure without premedication could not be recommended.

SUMMARY AND CONCLUSION

The effect of pre-operative medication with Demerol with either Phenergan or Atarax in controlling the behavior of nine difficult patients has been studied: three normal cooperative patients, non-premedicated, were included to observe their responses in performing long operative procedure.

It was concluded that these combination of drugs are safe and effective for all normal patients, and permitted enough time to perform long operative dental procedures in children without affecting the child's personality. And also, successful child management in difficult patient with the aid of medication can establish the permanent understanding of dental procedures for patient and patient's self confidence in future dental treatment. As a result of this fact, medication for pre-operative sedation can be eliminated on subsequent recall.

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