Control of Vestibular Toxic Effects of Streptomycin by Dramamine*

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From the beginning of its use in the treatment of pulmonary tuberculosis, the toxic effects of streptomycin on the vestibular apparatus has been noted.3,9,12,16 These actions varied from complete and irreversible loss of vestibular function in the majority of patients treated4,6,8,15,34 to symptoms of vestibular dysfunction with a return to normal after the cessation of therapy.9,16

The site of the lesion in the vestibular apparatus was believed by some investigators to be in the peripheral portion9,14,35 and by others to be central,19,26 while Snell18 and Moffitt and Norman17 found features of involvement of both. Bunn4 believes that the labyrinth died completely and Dix7 concluded that streptomycin had a selective toxic action upon the vestibular apparatus.

After streptomycin had been used on quite a number of cases, it was discovered that a reduction in the total amount of drug administered brought about a decrease in the number of patients who showed vestibular involvement.3,21,23 At first it was believed that the eosinophilia and histamine-like reactions observed were due to impurities in the drug,12 since the large number of patients showing this, decreased following a reduction in total dosage. Bignall and Crafton1 found that benadryl (Beta-dimethyl-aminomethyl benzhydryl ether hydrochloride) abolished or considerably reduced nausea and vomiting, and Fowler and Feind10 reported that cats given neo-antergan (N-p-methoxybenzyl N',N'-dimethyl-N - a - pyridylethylene - diamine maleate) or pyribenzamine (N,N-dimethyl-N'-benzyl-N' - [a-pyridyl] - ethylenediamine monohydrochloride) along with streptomycin, showed prolongation of the time before otic symptoms developed.

In 1949, Guy and Carliner11 reported the effectiveness of dramamine (B-dimethylaminoethyl-benzohydryl ether 8-chlorotheophyllinate) in the prevention or reduction of seasickness. This was

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followed by the work of Strickland and Hahn with this drug in decreasing the incidence of airsickness. Campbell observed a reduction of symptoms of vestibular reactions in patients following the labyrinthine fenestration operation when this drug was employed.

For the past several years, streptomycin has been employed in the treatment of tuberculosis at this hospital. Many patients, while receiving this substance, complained at various times of a feeling of "light-headedness" or of dizziness. No dysfunction of the vestibular apparatus could be demonstrated in these cases either before or after the appearance of these symptoms. After the reports of the use of dramamine for the relief of these symptoms, but due to other causes, it was felt that this drug possibly could give symptomatic relief to these patients.

A detailed study was made on nine patients. All of them received streptomycin in doses of 1 gm. a day except one, a case of tuberculous meningitis, who received 150 gms. in 38 days and 0.85 gms. intrathecally. The onset of dizziness varied from 12 to 49 days after the beginning of administration of the drug, with an average of 28.7 days. The patient with tuberculous meningitis had his onset of severe dizziness 32 days after therapy was begun. The dizziness varied from mild "light-headedness" to such severity that the patient was very conscious of it.

None of the patients complained of tinnitus or any disturbance of hearing. Audiometric and caloric tests revealed no significant deviation from the ones performed before the beginning of streptomycin therapy. The patients were given dramamine in doses from 150 to 400 mgm. daily for from one to 28 days, with an average of 5.3 days. Symptoms disappeared in from one to seven days, with an average of 3.57 days except in two patients who still had dizziness after 28 and 90 days of dramamine, the latter being the case of tuberculous meningitis.

Bearing in mind the possibility that the symptoms could be due to an allergic reaction to streptomycin, a determination of the eosinophils in the blood was made before dramamine was given and after it had been discontinued. The number of eosinophils at the onset of symptoms varied from two to 10 with an average of five. After cessation of therapy, the eosinophil count was from one to four with an average of four. We believe that this demonstrates that an allergic reaction did not occur.

SUMMARY

From the above, it is our opinion that dramamine is a useful drug in the symptomatic relief of the dizziness which is encountered during streptomycin therapy. Further investigation may
reveal that this drug may prevent the toxic effects of streptomycin on the vestibular apparatus.

RESUMEN

De acuerdo a lo dicho mas arriba, nosotros opinamos que la dramamina, es una droga útil en el tratamiento sintomático del vértigo, que se encuentra durante el tratamiento con la estreptomicina. Mas investigación en la materia, tal vez demuestre que esta droga puede prevenir los efectos tóxicos de la estreptomicina, en el aparato vestibular.

REFERENCES