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EXPERIMENTAL SALICYLIC ACID-AMBLYOPIA.

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[*Reprinted from American Ophthalmological Society Transactions, 1895.*]

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It is not unnatural, owing to the physiological action of salicylic acid and the salicylates and the well-known symptoms which they produce in full doses — symptoms resembling in many particulars those which we know under the general name of cinchonism — that visual disturbances analogous to those produced by toxic doses of quinine should be the result of the ingestion of large quantities of these drugs.

Thus Reiss,* in his research on the effects of salicylate of sodium on healthy people, noted tinnitus aurium and disturbance of vision after five-gramme doses.

The first case of importance, however, is the one reported by E. Gatti†: A sixteen-year-old, robust peasant girl was given, on account of articular rheumatism, eight grammes of salicylate of soda, divided into ten doses, one dose to be taken hourly. After receiving the last dose she fell asleep, and awoke entirely blind, even quantitative light perception being lacking. The sensibility of the cornea and the sclera was normal; there was well-marked mydriasis; the media were clear; there was a light gray reflex from the retina depending upon the decided choroidal pigment. The optic papilla was normal, its borders sharply marked, and the retinal veins well filled — conditions which obtained after the restoration of vision. Other symptoms were: Dullness of hearing, weak heart sounds, small pulse, and slight perspiration. The urine was free from albumen and sugar. Ten hours later the patient could count fingers, and twenty-four hours after the blindness originally began vision was restored. Mydriasis persisted for several days. The amaurosis was explained by a direct action of the salicylate of soda upon the retina and optic nerve.

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* Berl. klin. Wochenschr., Nr. 50, 1875.

† Abstract in Nagel's Jahrsbericht f. Ophtalmologie, Vol. xi, p. 243, 1880.

Knapp,* describing quinine blindness, states that he has seen three cases presenting precisely analogous symptoms, due to large doses of salicylic acid and the salicylate of soda.

H. Brunner † refers to salicylic acid amblyopia, and declares that it has been described by several authors, but gives no particulars.

Evidently an amblyopia resembling that produced by quinine may result from the ingestion of large doses of salicylic acid, or of one of its salts. In order to test the effect of this drug on animals, I have performed a number of experiments similar to those of Brunner and myself with quinine. The following are the results:

EXPERIMENT I. — 3-21, '92. Yellow, short-haired dog; weight, twenty-two and one-half pounds; eyegrounds and vision normal. Sixty grains of salicylate of soda injected.

3-23, '92. No change in vision. Sixty grains of salicylic acid dissolved in ammonia, so that one-half grain of salicylic acid was contained in one minim of the solution, were injected.

3-24, '92. Dog partially blind; hangs his head, and fails to avoid objects in moving around the room; no positive change in the eyegrounds, save a slight diminution in the size of the arteries; pupils react normally.

3-28, '92. Dog partially blind, but there is slight conjunctivitis, and it is difficult, on account of the haziness of the cornea, to obtain a good look at the eyeground. Abscess at the point of injection; opened and carefully sterilized.

4-1, '92. No new symptoms, but there is distinct return of vision, as the dog no longer fails to avoid objects.

4-4, '92. Optic nerves decidedly pale, with arteries smaller than before, although the dog sees very well — at least, so far as central vision is concerned. There is contraction of the field of vision.

EXPERIMENT II. — Long-haired black dog; weight, thirteen pounds. Sixty grains of salicylate of soda injected at 4 P. M., 3-28, '92.

3-29, '92. Dog very weak; drags the hind legs, and apparently blind; there is haziness of the cornea, and some conjunctivitis; abscess at the point of injection.

* Bericht über die Dreizehente Versammlung der Ophtalmologischen Gesellschaft, Heidelberg, 1881, p. 103.

† Über Chininamaurose, Inaug. Diss., Zurich, 1882.

4-1, '92. Pyaemic symptoms; there is a large hypopyon-keratitis. Dog killed; eyes, optic nerves, and chiasms removed.

EXPERIMENT III. — Original salicylic acid dog was given sixty more grains of salicylate of soda, 4-4, '92.

4-8, '92. Corneæ have become hazy, and a small spot of suppuration has developed in the upper and outer part of each one; cornea not anæsthetic.

In several similar experiments similar results were obtained. We reach, therefore, the following interesting conclusion: Somewhat more slowly, but none the less certainly, it is possible to produce amblyopia with large doses of salicylic acid, or the salicylate of soda, the ophthalmoscopic appearances — blanching of the optic disc and contraction of the vessels — resembling, although in minor degree, those seen in quinine amaurosis.

Conjunctivitis, corneal haze, and even hypopyon-keratitis may follow injections of this drug. In the severe cases, however, this phenomenon is associated with abscess at the point of injection, and may be the result of pyaemia. Conjunctivitis of a mild type, without constitutional derangements, was also noted, and may be analogous to similar conditions which have been observed in human beings after the ingestion of this drug.* In all probability, the mechanism of salicylic acid blindness is the same as that of quinine amaurosis, although in the eyes which I examined I could not find evidences of endovasculitis, thrombosis, or degeneration of the optic nerve fibres, such as I have demonstrated in animals as the result of toxic doses of quinine. The salicylic acid dogs, however, were not allowed to remain alive for any great length of time after the first symptoms of amblyopia appeared, and further experimentation is necessary to show what the ultimate effect of this drug is upon the visual tract. Personally, I have little doubt that it is possible with it to produce extensive atrophy in the same manner as with quinine.

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* Consult Rosenberg Deutsch Med. Wochenschr., No. 33, 1889.