

CASE NOTES

BLINDNESS AFTER SNAKE-BITE*

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REPORTS of blindness produced by snake-bite are extremely rare. In one case described recently by Davenport and Budden (1953) bilateral secondary optic atrophy developed; the patient received Antivenine serum on the day of the bite and the changes in the eyes first appeared 6 days later. Jaksch (1897) mentions cases in which snake-bite led to amaurosis, but gives no detailed descriptions or ophthalmoscopic findings. Oettingen (1952) mentions cases of sudden amaurosis and paralysis of the ocular apparatus, but gives no details.

Case Report

A man aged 40 was admitted to hospital on June 14, 1954, having been bitten in the left leg by *Vipera Lebetina Gray*. He was in a state of severe shock, with nausea, vomiting, and a rapid weak pulse. Shortly after the accident a tourniquet had been applied to the leg and kept there for 24 hrs with interruptions of 5 minutes every hour. This left leg was already slightly swollen. The temperature was 37.6°C. Blood pressure was 60/40 mm. Hg.

The patient received Antivenine serum intra-muscularly and transfusions of 2,000 ml. blood and 1,000 ml. physiological saline on the day of admission. Cortisone treatment was started at once, but was continued for only 24 hrs. A few hours after admission the patient had blood in the faeces and the vomiting increased. Next morning the melaena and vomiting ceased, the general condition improved, and the blood pressure rose to 115/75 mm. Hg. The swelling of the bitten leg increased, and subcutaneous haemorrhages and blisters filled with blood-stained serum covered the leg. The bluish discolouration of the tissue reached the region of the umbilicus and the back.

Laboratory Tests.—On the third day after admission the haemoglobin was 12 g./100 ml., leucocytes 13,600, staphs 2 per cent., polymorphs 62 per cent., eosinophils 1 per cent., lymphocytes 31 per cent., monocytes 4 per cent.

The total protein was 5.6 g./100 ml., albumin 3.3 g./100 ml., globulin 2.3 g./100 ml. During the following days the haemoglobin dropped to 4.5 g./100 ml. The thrombocytes dropped from 25,000 on the fifth day to 7,000 on the sixth day; therefore cortisone treatment was recommenced, and 24 hours later the thrombocyte count was already normal. The reticulocytes increased from 4.6 to 10.0 per cent. during this period.

Two weeks after admission the haemoglobin had increased to 6.5 g./100 ml.

A lumbar puncture performed on the 12th day showed no abnormal findings.

The x-ray examination of the lungs was negative.

General Progress.—The patient's general condition improved gradually, the discolouration and swelling of the leg receded and the infected blisters healed under antibiotic treatment. From the third week onwards, the patient was allowed to get up. 31 days after admission he left the ward in good general condition.

Ophthalmological Findings.—On the sixth day, the patient started to complain of blurred vision in both eyes with pain over the globes. Visual acuity in the right eye was finger

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movements in front, and perception of light only from the temporal side; in the left eye it was finger movements from 1 m., with good perception of light. The pupils were round and 5 mm. in size. The right pupil did not react to light, the left pupil showed a slow reaction to light which was not maintained. No consensual light reflex was present on the left side. The left visual field appeared normal to a rough confrontation test with fingers. Both fundi showed blurred disc edges. Papilloedema of 2 D was present in the right eye and of 1 D in the left. The retinal veins were dilated and a few peripapillary haemorrhages were present. The maculae were free.

On the seventh day, the oedema of the right disc increased to 3 D and that of the left disc to 2 D. The discs were pinkish in colour and the haemorrhages and exudates were more numerous, and now reached the macular regions. The swelling of the discs continued to increase until the twelfth day, by which time the visual acuity in the right eye had dropped to perception of light on the temporal side, and that of the left eye to counting fingers at 0.5 m. The clinical picture was that of bilateral optic neuritis.

Ocular Condition on Discharge.—Visual acuity in the right eye was perception of light on temporal side, and that in the left eye was counting fingers at 1 m. with good perception of light. The visual fields could not be taken as the patient was not cooperative and could not fix the white spot on the perimeter. The condition of the pupils remained as on admission. The oedema of both discs was subsiding, and a secondary optic atrophy was beginning to appear in the right eye. The haemorrhages and exudates had mostly disappeared and sheathing of the arteries around the disc was present. The left eye still showed 2 D swelling.

4 weeks after discharge the visual acuity in the right eye was as before, but that in the left eye had improved from counting fingers at 1 m. to counting fingers at 6m. with only extra-macular fixation. The fundus on the right side showed secondary optic atrophy. The left fundus showed blurred disc edges with slight swelling.

5 months after discharge the visual acuity in the right eye was counting fingers at 1.5 m. from the temporal side only, while that in the left eye was 5/50 with eccentric fixation. The projection was good. The fundus in the right eye showed complete secondary optic atrophy, while the left fundus showed a partial secondary optic atrophy. The visual field of the right eye could not be taken; that of the left eye showed a restriction in the temporal field for about 40°, and in the lower, nasal quadrant a distinct step-up to 15°. The patient was not sufficiently cooperative to indicate the scotomata which were undoubtedly present.

Discussion

Changes associated with the vascular system appear to be the outstanding feature in the fundal findings. Casper (1955) noted gross changes in the glomeruli of the kidneys in fatal cases of snake-bite, consisting of gross aneurysmal dilatation of the capillaries, and arteriolar haemorrhages with dissolution of the vessel wall; in the cases he described there was sudden deterioration in the condition on or about the sixth day, after a temporary improvement in the clinical condition.

The possible causes of the optic neuritis include the snake venom, allergy to the Antivenine serum, and the multiple and extensive haemorrhages. There is little or no evidence from the literature to indicate that optic neuritis can result directly from the toxic influence of snake venom on the optic nerve, or that it can appear as a manifestation of allergy to the Antivenine serum. It is probable that in this case the optic nerve changes resulted from the severe haemorrhages present in the leg and body. It is well known that

haemorrhages from various parts of the body can result in optic neuritis, and that in such cases the optic neuritis usually appears between 3 and 7 days after the haemorrhage.

Terson (1922) gives the following statistics on the time of appearance of blindness after haemorrhage:

During haemorrhage	8.3	} Total 100
Immediately after ...	11.6	
Within 12 hours ...	14.2	
Within 2 days ...	19.2	
3-16 days ...	39.2	
Over 16 days ...	7.5	

Summary

(1) A report is given of a young man who developed bilateral optic neuritis 6 days after receiving a snake-bite in the leg.

(2) The vascular changes in the fundi may parallel the vascular changes noted in the kidneys by Casper (1955).

(3) It is suggested that the optic neuritis resulted from the severe haemorrhages which were present, and that it did not differ from the optic neuritis resulting from haemorrhages caused by factors other than snake-bite.

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