AN UNUSUAL CASE OF SELF-INFLICTED WOUNDS THROUGH THE SKULL FOLLOWED BY RECOVERY.*

BY

JOSEPH J. LEVIN,

HONORARY SURGEON, JOHANNESBURG GENERAL HOSPITAL; SENIOR
LECTURER IN CLINICAL SURGERY AND IN FORENSIC MEDICINE,
UNIVERSITY OF THE WITWATERSRAND.

On May 22nd, 1926, a European married woman, 27 years of age, was admitted to the gynaecological wards of the General Hospital, Johannesburg, under Dr. Gibson, with a tentative diagnosis of salpingitis. At the laparotomy, which was performed on May 25th, both tubes were found to be inflamed and both ovaries cystic. There were dense adhesions in the pelvis. The appendix, which was long and slightly congested, was all that was removed.

On October 9th, 1927, this woman was admitted to the hospital again, under the care of Mr. Ramsay Daly, with the head of a nail visible in the right temporal region of the scalp and an incised wound on the flexor aspect of her left wrist. She received immediate treatment from Dr. Coetzee, house-surgeon to Mr. Daly, to whom I am indebted for the notes of the case at that time.

The history obtained from the woman, who was quite conscious although somewhat dazed, was that she had driven the nail into the right temporal region herself, with the back of a chopper. The exact situation of the puncture was one and three-quarter inches behind the right zygomatic process and three-quarters of an inch above the zygomatic arch. She had also cut her wrist with a pair of scissors, severing the flexor carpi radialis and the palmaris longus tendons. The head of the nail, with a quarter of an inch of its stem, was visible externally. The nail was removed with a pair of dental forceps, and was found to be three inches in length (see the shorter of

the two nails in the illustration). The wound was cleaned with ether, painted with iodine, and sealed with a collodion dressing. It healed by first intention and gave no further trouble. Under general anaesthesia the tendons of the wrist were sutured; the skin wound closed completely, and the patient was discharged on October 26th.

Dr. Coetzee is of opinion that from the direction of the nail

when he extracted it the right temporal lobe of the brain must have been penetrated. He also remarks in his notes that there were no signs of gross mental aberration when she left the hospital.

On November 29th this same woman was admitted to the General Hospital suffering from signs and symptoms of gall-bladder disease. On this occasion she was placed under my care. Her mentality at this time can best be described by saying that she was garrulous and silly, yet I could not definitely state that she was grossly mentally deranged. In other words, she required no special attention as regards her mental condition. I operated on her on the day of her admission, and found the gall-bladder full of gall-stones. I removed the gall-bladder. She made an uninterrupted recovery, and was discharged on January 24th, 1928.

On March 23rd the woman was again admitted to the hospital under my care. On examination, at 4.15 p.m., I found the head of a nail six inches from the nasion and half an inch to the left of the middle line in the scalp. A skiagram showed a long nail right through the brain

(see illustration). She was conscious, and there were no signs of paralysis. She recognized me and addressed me by name. She gave a history of having driven the nail into her head with the back of a chopper. She asked me please to remove the nail as it was painful. There was an incised wound on the left wrist. No tendons had been cut. Under general anaesthesia I removed the nail, which proved to be four inches in length (see the longer of the two nails in the illustration). I believe it to be the correct procedure in all punctured wounds of the skull and in all depressed fractures to trephine, and this is my usual practice. Therefore I proceeded to remove a button of bone around the punctured wound in the skull. I found that the inner table had been damaged very little more than the outer table of the skull. The dura

bulged into the wound on account of subdural haemorrhage, and no pulsation was observed. I opened the dura by a cruciform incision and evacuated a good deal of fresh blood clot, and when this had been removed there was still some oozing from the cavity. As I could not see where the haemorrhage was coming from I plugged the cavity in the brain which had been made by the effusion of blood, and left the end of the plug protruding through the skin incision. The skin flap was closed by silkworm-gut suture. Forty-eight hours after the operation I removed the plug, and as I did so there was an efflux of what I took to be slightly blood-stained cerebro-spinal fluid. The wound healed by first intention. On March 29th she exhibited a double Kernig's sign and her neck was a little stiff. A lumbar puncture was performed, and showed the cerebro-spinal fluid under pressure, but perfectly clear.

The report from the South African Institute for Medical Research on the cerebro-spinal fluid was as follows:

"Microscopic examination of this specimen showed the presence of an occasional polymorphonuclear leucocyte, lymphocyte, and Gram-positive bacillus. Cultivation has resulted in a scanty growth of diphtheroid bacilli only."

Physically the patient improved day by day, and there were no further signs of meningitis or any other complications; she deteriorated mentally, however. For example, one day she imagined that her right leg was shorter than the left; on another day she told me she was deaf, although she heard my whispered remarks to her, and on most days she wailed and cried on the slightest provocation. In addition to this I obtained from her husband the history that she had more than once tried to do away with herself. On one occasion she drank tincture of iodine; on another she tried to cut her throat. Moreover, he informed me that she had attempted to strangle her children. Taking all these things into consideration, I thought she would be safer in a mental hospital; so after she had been up and walking about the wards for some days I certified her and sent her to the Pretoria Mental Hospital on April 19th, 1928.

Dr. Dorothy Holmes of the Pretoria Mental Hospital has kindly given me some notes about this patient's condition since her admission to that hospital, and also some notes of her condition when she was in the Mental Hospital as a voluntary patient in 1927.

"The patient was born in Ireland, being the third eldest of a family of seven children. Her parents are both alive. Patient reached the seventh standard at school at the age of 14 years. She came to South Africa when she was 11 years old. Her girlhood was uneventful. Her home conditions were comfortable and happy."

* Shown at the meeting of the Southern Transvaal Branch of the Medical Association of South Africa, held in April, 1928.

She worked as a typist, earning £6 to £7 per month. Later she married, and had two children. At the birth of the second infant the doctor advised that she should be sent to Valkenberg Mental Hospital. Her mother, however, would not agree to this, and nursed her herself. The patient recovered and returned to her husband. This husband deserted her, and she obtained a divorce from him in 1922. Her life with this man was very unhappy.

"A year after her divorce she married her present husband, who had been divorced from his first wife. His first wife is at present an inmate of the Pretoria Mental Hospital, being mentally disordered, suffering from manic-depressive psychosis of the mixed type. The patient has two children by the first husband living with her. On the advice of the probation officer in Johannesburg the patient applied for admission to the Pretoria Mental Hospital as a voluntary boarder on July 14th, 1927. Previous to this she had become very sleepless, her nerves were all upset; she stated that her husband gave her no money and no servants, that he ill-treated her, and that she had to work very hard. She attempted to cut her throat with a razor.

"On admission to the Mental Hospital in July she was depressed, unhappy, and lacrymose, weeping readily. She conversed rationally, and gave a correct account of herself. Her memory and orientation were intact. No delusions or hallucinations were elicited from her; she slept badly. By August 1st, 1927, she showed some improvement, was more cheerful, and took an interest in her surroundings. She expressed herself as being quite better, and wanted to return home. On August 9th, 1927, she returned home."

It will be noted that on October 9th, 1927, she was admitted to the General Hospital, Johannesburg, after having driven the first nail into her head. Dr. Holmes's notes on her condition on her second admission to the Mental Hospital, on April 19th, 1928, are as follows:

"The patient is acutely depressed, cries easily, and is oriented for time and place. She does not give a correct account of herself, and feigns amnesia. She begins to speak, and then says, 'Oh! I can't remember; my memory has completely gone.' (Obviously not true.) She threatened suicide, and emphatically told the nurse that she would do it properly next time. She is under constant observation. On May 1st the patient was still very depressed and looked miserable. She maintained that her memory was lost. She stated that she was lame, but when she thought she was unobserved her gait and station were normal. She complained readily and was hypochondriacal. She slept badly, and sedatives had to be administered.

"By May 26th she had improved mentally, and occupied her time by reading. She sleeps and eats well and desires to go home to her mother.

"Her emotional tone is unstable, but her consciousness is clear, and her attention can be obtained and retained; her behaviour is irresponsible. She converses rationally, but her reasoning and powers of judgement are slightly impaired. Her memory and orientation are intact; no delusions or hallucinations can be elicited. Her psychomotor reaction is slightly retarded.

"*Diagnosis:* Manic-depressive psychosis—depressed type. *Prognosis:* (1) Immediate favourable; (2) ultimate bad. Will recover from present attack, but will probably relapse."

FURTHER OBSERVATIONS ON ADRENALINE MYDRIASIS AT THE MENOPAUSE.

BY

JOHN H. HANNAN, M.A., M.D., B.CHIR.

(From the Physiological Laboratories of the Middlesex Hospital.)

In a preliminary communication to this *Journal*,¹ and elsewhere,^{2,3} I have presented evidence that women at the menopause show an increase in sensitiveness to adrenaline. It has been shown that no mydriasis occurs in normal individuals following the instillation of adrenaline into the conjunctival sac, whereas I have demonstrated that a transitory mydriasis occurs at the menopause in some women, who complain of severe "flushing."

Our knowledge concerning the internal secretion of the ovaries has been considerably augmented by the work of Allen and Doisy and others working on the mode of action and methods of standardization of the oestrus-producing autacoid. Up to the present, however, the practical value of this work, particularly in connexion with the treatment of women with ovarian extracts, has been somewhat doubtful, since the condition of oestrus, as such, does not occur in women, and the system of standardization based on the production of oestrus in lower animals is, therefore, not strictly applicable to ovarian therapy in women. Furthermore, it has been shown that there is more than one active substance present in the internal secretion of the whole ovary.

It will be seen that some investigation was necessary to determine if a symptom common to both man and to lower animals occurs following oophorectomy. Work was there-

fore undertaken to determine if adrenaline mydriasis following oophorectomy occurs in rats as it does in some women at the menopause.

EXPERIMENTAL TECHNIQUE.

Test for Adrenaline Mydriasis.

One drop of adrenaline hydrochloride was instilled into the animal's conjunctival sac, at five-minute intervals, for twenty minutes. The adrenaline mydriasis reaction was considered to be positive if the pupil on the treated side became obviously dilated within this time when compared with the untreated eye.

Over a period of twelve months a large number of young mature animals—rats, rabbits, and guinea-pigs—have been subjected to this test, but in no instance has mydriasis occurred.

On October 20th, 1927, 6 albino female rats, having regular 3-4 day oestral cycles, were oophorectomized under ether. From this time until June 6th, 1928, the adrenaline mydriasis test has been applied at regular intervals to these animals, 64 individual observations having been made during this period. All the rats in this experiment showed adrenaline mydriasis commencing at different periods; in no instance did a rat which had once shown adrenaline mydriasis fail to reproduce the phenomenon at subsequent tests.

The reaction to adrenaline commenced in the animals under consideration on the 91st day of the experiment, and all rats showed mydriasis by the 154th day.

EFFECT OF ADMINISTRATION OF THE OESTRUS-PRODUCING AUTACOID.

I have recently shown⁴ that the oestrus-producing autacoid is effective when administered in adequate doses by the oral route, and that it will produce changes characteristic of oestrus in the vaginal smears in test rats. The dose which is effective by the mouth is some sixty times larger than that which is effective when given subcutaneously. It was decided to treat the adrenaline sensitiveness of the rats by the oral administration of the autacoid, in doses of the size which had been found necessary to produce oestrus. Only 5 of the 6 rats were at this time available for the experiment, as one had been accidentally killed some time previously.

Experiment I.—Twelve sows' ovaries, rich in follicles, were given to the 5 rats in one cage. The adrenaline mydriasis test was applied on the third day of the experiment, and was found to be positive in four instances, negative in one. An observation on the eighth day showed a return of the mydriatic reaction in all the rats.

Experiment II.—Five hundred rat units of a tested preparation of the autacoid were mixed with the animals' drinking water. On the third day of the experiment no adrenaline mydriasis occurred in any instance; a further observation on the eighth day showed a return in all instances of the mydriatic reaction.

Experiment III.—In this experiment the number of rat units of the preparation administered in water was reduced to 150. Observations on the third and eighth days of the experiment showed adrenaline mydriasis in all instances.

DISCUSSION.

It will be seen from these experiments that 500 rat units of the autacoid cured the adrenaline sensitiveness of all 5 rats; 12 sows' ovaries produced a cure in only one case; 150 rat units of the autacoid failed to produce any effect.

In my experiments on the production of oestrus similar doses of the autacoid and sows' ovaries were administered to batches of 6 rats, as compared with the batch of 5 animals used in this experiment, and it is interesting to note that the dosage of the autacoid which I had found necessary to produce oestrus corresponded roughly to that which was necessary to control mydriasis in the investigation under consideration. It will also be observed that the controlling influence of the autacoid passed off in all instances by the eighth day of the experiment.

In my work on women, to which I have drawn attention previously in this paper,⁵ only 6.2 per cent. of those women at the menopause who were tested showed adrenaline mydriasis, whereas all the rats gave positive results.

In order to explain this phenomenon the point which first arises is that women suffering from the normal menopause have still some ovarian tissue left, and are but