A CONFUSIONAL STATE ASSOCIATED WITH INFECTIVE ENDOCARDITIS.

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MRS. X—, a widow, æt. 28, was recently admitted to Graylingwell Hospital as a voluntary patient.

Family history as far as could be made out was negative.

Past history and personality.—She was described as a cheerful, steady girl, who had married at 21, and had unfortunately lost her husband some few months after marriage. More recently she appeared to be somewhat unstable emotionally and, in spite of serious organic disorder, had been energetic and over-active in her pleasures and amusements, and had taken alcohol freely. There was no previous history of " nervous breakdown ", fits or paralysis. Eighteen months ago she had a severe attack of rheumatic fever with endocarditis, and about six weeks before admission had an attack of " influenza ".

Present illness.—Her present illness commenced, according to her parents, *some six weeks before admission* and was attributed by them to the attack of influenza, and also to domestic worries. She gradually became weak, dull and drowsy, persistently complained of headaches and had lost considerable weight. Insomnia and constipation were other marked features during this time. More recently, however, mental symptoms had been more in evidence. She had become more confused and disorientated, and was generally dull, drowsy and semi-stuporose, although her state of consciousness and alertness seems to have fluctuated very much from time to time. Often she would appear brighter mentally, but she was facile and emotional and would talk freely about her symptoms, describing peculiar pains which seemed to rush from the head and focus themselves on the root of the nose " like a ball of fire ", which dispersed in flames, giving her instant relief from her pain.

On admission.—She was a tall and very thin woman with poor, flabby musculature and a sallow complexion, almost *café au lait*. Her temperature was 100·4°, pulse 92 and respirations 22. She looked " toxic " and dehydrated. There were sordes about the gums and her tongue was dry and red. There was a diffuse purpuric rash on the trunk and limbs, particularly marked on the forearms, which had almost a flea-bitten appearance. In addition there was a small bruised area on the sacrum and some discoloration over both buttocks. A cough was present: the chest moved fairly well; the note was good, but scattered rhonchi were audible in the left lung. The apex-beat was in the sixth intercostal space about 1 in. outside the midclavicular line, the cardiac impulse diffuse and forcible. There was a loud blowing systolic murmur over the mitral area conducted outwards for a short distance. The pulse was rapid, regular, and raised in tension. The liver and spleen were not palpable.

The urine contained a heavy cloud of albumen but no sugar or blood. The pupils were dilated and sluggish: there was asymmetry of the face, the left side was paretic, and occasional irregular twitchings of the right facial muscles, particularly the orbicularis palpebrarum, were observed. The muscles of the arms and legs were poor in tone and power, the tendon reflexes generally were diminished and flexor plantar responses were obtained. There was analgesia of the distal parts of the limbs.

Mentally.—She appeared vacant and dull, and was confused in manner and conversation. She was listless, her reaction to questions was poor, her memory defective, and she was partly disorientated. Her judgment and reasoning powers were impaired and she showed no insight into her condition. During the course of the illness she was generally euphoric, and would often reply when questioned as to how she felt, " I feel splendid ". She was rather facile and emotionally unstable, and appeared to be somewhat retarded mentally.

A diagnosis of septic endocarditis was made and her further *progress* was as follows: During the week following admission her general condition was more or less unchanged. She was running a remittent temperature ranging between 99·2–103°. She was markedly asthenic and often incontinent of urine, and fresh crops of the purpuric rash were noted. She complained of headache at times, but was, for the most part, dull, listless and confused. However, the degree of confusion varied greatly; at times she appeared semi-stuporose; at other times she was restless, talkative and emotional.

On the morning of the eleventh day after admission there was an alarming collapse. She had just taken some fluid nourishment, when she suddenly became semi-comatose. The pupils were small, reacting freely to light, and the corneal reflex was present. Some twitching of the right facial muscles was observed, the limbs were flaccid and paretic, diminished tendon reflexes were obtained, and a double extensor plantar response was present.

There was marked albuminuria, but no other abnormality was observed in the urine.

Later the same day she regained consciousness and again declared that she felt " splendid ". She passed a comfortable night and the following day appeared slightly improved, although still confused and disorientated. In the evening, however, she complained of severe occipital pain; nausea and retching were present, and she lapsed quickly into a comatose condition and died.

Post-mortem findings:

The lungs both showed marked œdema and congestion.

The heart was considerably enlarged, weighing 630 grm. The right auricle and ventricle were both dilated, the tricuspid and pulmonary valves thin and atrophic, and the myocardium pale, fatty and rather friable. The left ventricle was considerably hypertrophied; the mitral valves were shrunken and scarred, and were the seat of crumbling vegetations extending to the adjacent endocardium of the left auricle, which over an area of almost 2 sq. in. was ulcerated and eroded by hæmorrhagic friable vegetations. There were numerous small hæmorrhagic infarcted areas in the walls of the *small intestine*.

The kidneys were both very much enlarged and were pitted and lobulated. The capsules were thin, stripped fairly easily, and many small white infarcts were present.

The spleen was rather larger than normal and was very soft and almost diffluent. A number of small infarcts were present.

The brain.—There was extensive subdural hæmorrhage over the occipital region of the brain and the pia arachnoid was very congested. In each occipital lobe there was an area of hæmorrhage about the size of a walnut and extending back to the posterior pole of the hemisphere and, in the case of the left side, the hæmorrhage showed some early organization and an attempt at encapsulation. There was, further, a small hæmorrhagic area in the right lobe of the cerebellum.

Discussion.

This case is interesting as showing the development of a confusional state associated with septic endocarditis. In the light of the post-mortem findings, the extensive area of ulcerative endocarditis, the damage to the brain and widespread area of infarction, it appears highly probable that her dulled

mental state, her emotional instability and incontinence, were due to repeated small embolic hæmorrhages in the frontal lobes and hemispheres generally, and possibly in the thalamus. It suggests, too, that the confusional states which sometimes occur in advanced cases of endocarditis (apart from septic endocarditis) might be explained on this physical basis of repeated embolic hæmorrhages in the brain, not large enough or situated in the necessary position to cause the usual sudden marked physical lesions of hemiplegia, etc., but sufficiently destructive to damage the associational paths subserving the higher centres of cerebration.

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