differences did not reach this level of significance; later comparisons were not valid because of the interposition of treatment of some of the volunteers.

Study 2.—Because it was thought that 500,000 parasites might have been an overwhelming inoculum, six other volunteers, three "sicklers" and three "non-sicklers," were given an injection of only 50,000 parasites. The parasite counts of these subjects are presented in Table II. It was necessary to interrupt the infection in two of the three "non-sicklers" before it was necessary to interrupt the infections of any of the "sicklers."

Study 3.—In an attempt to determine the effect of acquired immunity on the resistance of "sicklers" and "non-sicklers" to malaria, the same 10 volunteers who had been inoculated with 500,000 parasites in study 1 were reinoculated with 50,000 parasites after a lapse of four months. The parasite counts during this study are presented in Table III. Up to and including day 10, when treatment was started on subject N3, the means of the logarithms of the parasite counts of the "sicklers" and "non-sicklers" never differed to a statistically significant degree. Although it was necessary to treat two of the five "non-sicklers" relatively early in the course of their infection, the other three were able to continue for the remainder of the study, while only one of the "sicklers" was able to do so.

Discussion

In comparing the resistance of individuals with and without sickle-cell trait to malaria, we have been able to demonstrate only unimpressive differences of questionable significance. These findings differ from those of Allison (1954). There are several possible explanations for this difference in results. While Allison used an African and a Malayan strain of *falciparum* malaria, we used a Panamanian strain. It is conceivable, although it does not appear very likely, that strain differences between the parasites used were sufficient to account for the different results. His subjects were highly immune; ours were non-immune in studies 1 and 2, and only slightly immune in study 3. It is also possible that any advantage which sickle-cell haemoglobin gives an individual infected with malaria is so slight in itself as to become manifest only when a high degree of acquired immunity already exists.

It would appear that further work is necessary to evaluate conclusively the role of sickle-cell haemoglobin in resistance to malaria.

Summary

Eight non-immune men with sickle-cell trait and eight non-immune men whose red cells contained only normal haemoglobin were inoculated with *P. falciparum* intravenously. Ten of these men were reinoculated four months after their initial course of malaria. The resulting parasitaemias tended to be somewhat less marked in the men with the sickle trait than in those without the trait, but the difference observed was unimpressive and of questionable significance.

We acknowledge the helpful advice of Dr. Alf S. Alving, of the Department of Medicine, University of Chicago, Illinois. The investigations reported in this paper would not have been possible except for the co-operation of the inmates and the administrative staff of Stateville Penitentiary, Joliet, Illinois, U.S.A.

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EMERGENCY MITRAL VALVOTOMY AT FULL TERM

REPORT OF A CASE

BY

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Several reports have appeared in recent literature on the value of mitral valvotomy during pregnancy (Baker *et al.*, 1952; Logan and Turner, 1952; Sellors *et al.*, 1953; Mulcahy, 1954). These emphasize that, in a limited and properly selected group of cases, this procedure may play an effective part in lessening disability, and thus help to reduce the maternal mortality rate due to heart disease. These reports advise that, when indicated, operation should take place during the first trimester or as early in pregnancy as possible, and most of the recorded valvotomies in pregnant women have been done during these early months.

We here record the case history of a patient with pure mitral stenosis who had a valvotomy performed at full term, ten hours before the birth of her ninth child. No such case has so far been recorded, though the feasibility of this procedure at all stages of pregnancy has been suggested previously (Mulcahy, 1954).

Case Report

A married woman aged 35 was admitted to the Coombe Maternity Hospital on November 29, 1954, in the early stages of labour. She had been a "defaulter" from the antenatal clinic. Apart from the normal labour pains, she was observed to be considerably distressed with dyspnoea, orthopnoea, cough, and cyanosis. On examination she was found to have pure mitral stenosis. She was in regular rhythm, and, though there was no evidence of heart failure, she was regarded at the time as a likely subject for a later pulmonary oedema. This impression was supported by the tachycardia, the loud slapping first sound following the unusually harsh mid-diastolic and presystolic murmur, the easily palpable right ventricle and pulmonary artery, and the evidence of early pulmonary venous congestion on the skiagram taken twenty-four hours after admission. The film also revealed a large left auricle and pulmonary artery, but only minimal cardiac enlargement. Further factors, obviously important in her case, were the six-weeks history of persistent non-productive cough and the presence of anaemia, her haemoglobin being 55%.

This patient had attended the antenatal clinic beforehand, but, despite a history of increasing distress on exertion and of a long-standing cough, she had failed to report anything abnormal. At no time had she complained of haemoptysis. During her earlier pregnancies, the last having been 22 months previously, she recalled no notable symptoms, nor was she informed of any abnormality in the heart. There was no previous history of rheumatic fever.

Treatment was started at once. It included penicillin, 500,000 units twice daily, digoxin, 0.25 mg. eight-hourly, sedation, and efforts to suppress the cough. Notwithstanding these measures and despite the cessation of labour pains a few hours after admission, her condition showed little or no improvement. Morphine, $\frac{1}{2}$ gr. (10 mg.) six-hourly, intravenous aminophylline, and streptomycin were added

48 hours later, but next day (December 2) the probability of pulmonary oedema was more apparent. The heart sounds were now loudly slapping and the presystolic murmur was unusually harsh. A most noticeable feature was the obvious pulsation of the right ventricle and pulmonary artery, causing a parasternal lift of exceptional degree. This was a warning of the likelihood of pulmonary oedema—particularly, we believed, in the event of the resumption of labour. Some impairment of air entry in the base of the left lung was obvious for about two days, but by now increasing consolidation was apparent. This was an added complication and appeared to be uninfluenced by the antibiotics administered. In view of the patient's steady deterioration valvotomy as an urgent measure was advised.

The operation was performed uneventfully three days after admission. The lower lobe of the left lung showed considerable congestion when the thorax was opened, but this did not interfere with the surgical manipulations. The left auricular appendage was large and free of clot, and was dealt with in the routine manner. As expected, the valve was tight, but both commissures separated without difficulty. The pulmonary artery was large and tense at first, but less so towards the end of the operation. The patient was returned to the ward in a satisfactory condition, and after a short labour a live infant, weighing 8 lb. 4 oz. (3.7 kg.), was born 10 hours later without difficulty or distress to the mother.

She had more than the usual post-operative cough and sputum from the residual congestion and atelectasis of the left lower lobe. These symptoms, however, responded within a few weeks to antibiotics and symptomatic treatment. Her convalescence was otherwise quite uneventful, and she was discharged on December 31.

She has since been seen by us. Her general condition seems to be quite good, and there is considerable modification of the physical signs in her heart, the mid-diastolic bruit being shorter and audible only when she is lying on her left side. She is leading a normal active life, as she was before the start of her last pregnancy.

Comment

This case history illustrates the value of mitral valvotomy as an emergency procedure during the later months of pregnancy. The presence of moderate anaemia and of long-standing persistent coughing undoubtedly played an important part in this patient's final and irreversible deterioration. It is unlikely that valvotomy at this stage would have been necessary in the absence of these influences, and we are of the opinion that the avoidance of such important aggravating factors during pregnancy should almost preclude the necessity for operation at such a late stage. There is, however, still a definite indication for valvotomy in the early months of pregnancy in properly selected patients.

We are indebted to Dr. J. K. Feeney, Master of the Coombe Lying-in Hospital, under whose care this patient was admitted, for his advice on the obstetrical problem, and for the facilities afforded in his hospital; to Dr. M. I. Drury, consulting cardiologist, National Maternity Hospital, Dr. R. Davys, anaesthetist, and Mr. J. G. Maher, assistant surgeon, St. Vincent's Hospital, Dublin, for their invaluable assistance.

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RESERPINE IN TREATMENT OF CHRONIC PSYCHOTICS PRELIMINARY OBSERVATIONS

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Recent work in America (Kline, 1954) on the treatment of psychotics with rauwolfia and its alkaloids suggests that the ancient Indian belief in the value of this root in the treatment of mental illness was well based. In view of that work it was decided to try the effect of this drug on a group of chronically mentally ill patients. The group, a small one of 32 male patients, consisted of 26 schizophrenics, 4 cases of schizophrenia superimposed on basic mental defectiveness, 1 chronic melancholic, and 1 with arrested G.P.I. The patients varied in the date of their admission to hospital from 1912 to 1952, all but six having been in this hospital for over five years.

They were segregated into a section of one of the wards for mentally disturbed males under a senior nurse, and it was arranged that their nursing care should be, so far as possible, maintained by the same nurses.

In choosing the patients for this test, only those in a satisfactory physical state were included, and all showed behaviour problems. Thus 11 were noted to be destructive, 13 were faulty in their habits, 11 were liable to impulsive violence, 4 required regular spoon-feeding, and others needed considerable prompting and occasional spoon-feeding with their meals. All 32 were unoccupiable. The degree of destructiveness among these patients was great. One of them, the most destructive in the hospital, destroyed on an average one blanket a night and one mattress a week, and had started to gnaw the wood on his bed.

Procedure

Initially, six patients were treated with reserpine ("serpasil"), being given 1 mg. four times a day, which seemed to be the dose most commonly used by the American authorities. In view of its known hypotensive effect, daily blood-pressure readings were taken on all patients for the five-months period of the trial. In addition four-hourly temperature and pulse rates were charted at first, but, as no significant findings were noted, these were later reduced to morning and evening readings. The hypotensive effect was variable: whereas most patients showed an initial small drop, in one or two the blood pressure fell considerably. Readings of 60/50 and 64/46 were obtained in two cases. These low blood-pressure readings were not found until the patients had been on reserpine for more than two weeks, and in both cases they were symptomless. Their occurrence, however, suggests the importance of regular blood-pressure readings when patients are first treated with this drug. The blood pressure in both these cases later returned to normal on a slightly smaller dose. Following this, it was decided to start with smaller amounts, and 0.5 mg. three times a day became the initial dose. The dose was constantly under review in all cases, and from the experience gained it seems that there is no fixed dose, though it was found that the effective dose varied from 0.5 to 1 mg. four times a day. In all cases the drug was administered by mouth.

Results

In one case the maximum improvement was noted when one dose was given during the night. Without this dose the patient's condition relapsed during the night, but he rapidly

"When should baby wear shoes?" This is typical of the questions answered in *Our Children's Feet*, a pamphlet for parents issued by the Foot Health Educational Bureau of the Central Council for Health Education, Tavistock House, Tavistock Square, London, W.C.1 (price, 6d.).