past two months some enlargement of the veins over the front of the left chest had appeared, and the patient complained of some degree of breathlessness and of pain in the chest.

When I examined her I found three hard nodules, as Dr. Bromley had observed. These were each about half an inch in diameter, were situated beneath the skin, and were not fixed either to the skin or to the deeper parts. These nodules were each close to the operation scar and were separated from one another by about an inch and a half. The front of the chest to the inner side of the scar was somewhat prominent, and a few dilated veins were to be seen. There was also some degree of dullness on percussion over the prominent area. The patient was rather breathless and looked ill, but not extremely so. She, however, died the same night.

There can be no reasonable doubt that the superficial nodules were carcinomatous, and that they had appeared quite recently, for Dr. Bromley was satisfied that they were not present much more than two months before my examination. There was certainly also a growth in the mediastinum, which had probably been present for some time, and which presumably caused the patient's death.

In spite of the interval of no less than thirty-one years there can be little doubt that the subcutaneous nodules and the mediastinal growth were directly connected with the original growth in the breast, and, if this is so, it would appear that carcinoma cells may lay dormant in the tissues for a period of upwards of thirty years, and for all this time give no sign, and then simultaneously, in at least four separate and distinct sites, once more become active.

What was the exciting cause of this fresh outburst of activity? Whatever it was, apparently it must have been general rather than local, otherwise the fact of four separate and independent foci becoming active at the same time cannot be explained, for, as regards the three subcutaneous nodules, as has already been mentioned, these were separated from one another by apparently healthy subcutaneous tissue, and were, moreover, all of practically the same size, and hence began to grow at the same time.

DIAGNOSTIC VALUE OF THE SUGAR CONTENT OF THE CEREBRO-SPINAL FLUID IN ENCEPHALITIS LETHARGICA.

BY

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So far back as 1917 it was observed by von Economo that the sugar content of the cerebro-spinal fluid was increased in many, if not in all, cases of encephalitis lethargica. During the past year I have examined a series of specimens of cerebro-spinal fluid withdrawn from patients provisionally diagnosed as suffering from encephalitis lethargica, and in all cases in which this diagnosis was finally confirmed the sugar content of the fluid was found to be increased.

The method employed for the estimation of this sugar content was that advocated by Maclean¹ for the determination of the sugar content of the blood: it was found to be satisfactory in over a hundred examinations of cerebro-spinal fluid in addition to those recorded in the accompanying table. By this method the figure for apparently healthy fluids was found to be within the range of 0.065 to 0.08 per cent., whilst, using Bang's microscopic method,² the average figure obtained was 0.072. Although it may be conceded that the method of Bang or Folin-Wu, or again the modification of the Benedict-Osterberg procedure used by Alpers³ and others, would have given more accurate results, yet Maclean's method is nowadays so well known to many general practitioners, owing to the modern discoveries in connexion with the diagnosis and treatment of diabetes, and can be so easily performed with a reasonable degree of accuracy, that any considerable departure from the normal is readily appreciated.

It will be observed from examination of the accompanying table that in almost every case finally diagnosed as encephalitis lethargica the sugar content was definitely

increased above the normal, and that in no instance was there any diminution. Increased sugar values occur undoubtedly in certain other diseases, yet the absence of a decrease is, I think, a valuable point in diagnosing this condition from the group of other meningeal diseases, especially from tuberculous meningitis. The failure of 1 c.cm. of cerebro-spinal fluid to reduce 0.25 c.cm. of Fehling's solution would also probably be of value as a criterion in cases in which an estimation of the amount of sugar present was impracticable. Such a procedure, by excluding encephalitis lethargica, should be of considerable utility, whilst the indication in this way of a definite increase in the sugar content would go far towards establishing a positive diagnosis.

Table showing Sugar Content (percentages) of the Cerebro-spinal Fluid in Encephalitis Lethargica and Similar Diseases.
(The initials are those of the patients examined.)

Encephalitis lethargica.				Other meningeal infections.			
S. A. ...	...	...	0.131	E. El. ...	...	...	0.056
M. R. ...	...	...	0.112	H. W. T. ...	...	...	0.062
E. H. ...	...	...	0.116	R. ...	...	...	0.041
P. R. ...	...	...	0.100	A. B. ...	...	...	0.041
W. D. ...	...	...	0.101	N. Ro. ...	...	...	0.067
B. ...	...	...	0.125	X. ...	...	...	0.046
R. S. ...	...	...	0.135	M. ...	...	...	0.062
I. N. ...	...	...	0.130	Average sugar content=0.054			
M. G. ...	...	...	0.110	Other conditions clinically like encephalitis lethargica.			
T. O. ...	...	...	0.100				
C. B. ...	...	...	0.125				
W. ...	...	...	0.118				
M. H. ...	...	...	0.100				
F. G. ...	...	...	0.096				
M. K. ...	...	...	0.081				
Average sugar content=0.112							
Tuberculous meningitis.				Average sugar content=0.080			
S. A. N. ...	...	...	0.052				
E. A. ...	...	...	0.042				
L. W. ...	...	...	0.064				
M. D. ...	...	...	0.042				
Average sugar content=0.050							
				* Uraemia case.			

In nearly every case of encephalitis lethargica in the series the eye sign described by Thorp⁴ was present—a valuable diagnostic point.

REFERENCES.

¹ Maclean: *Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes*. ² H. Kabler: *Wien. klin. Woch.*, 35, 8, 1922. ³ Alpers *et al.*: *Arch. Neurol. and Psych.*, June, 1924, vol. ii, No. 6. ⁴ Thorp: *BRITISH MEDICAL JOURNAL*, 1921, vol. ii, p. 508.

Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

THROMBO-ANGIITIS OBLITERANS.

IN view of the recent article on thrombo-angiitis obliterans, by Telford and Stopford (*BRITISH MEDICAL JOURNAL*, December 6th, 1924, p. 1035), the following case is of interest.

A carter (British), aged 43, had been subject for twelve months to pain in the right calf and foot after walking; the pain subsided on resting, but returned on further exercise. The condition was worse in cold weather. He first noticed change in the colour of his toes seven weeks prior to admission to hospital; there was no history of injury to the foot.

Examination revealed dry gangrene of the third toe and part of the adjacent toes, the gangrene extending half-way up the dorsum of the foot. Palpation revealed pulsation in the femoral artery, extending to the apex of Scarpa's triangle; elsewhere in the limb no pulsation could be detected. Cutaneous sensation of the right foot was impaired, and there was marked wasting of the muscles of both lower limbs. There was slight oedema of the left foot. His general condition was good; nothing abnormal was detected in heart, lungs, or urine; the Wassermann reaction was negative.

A supracondylar amputation was performed. The tissues of the stump were rather anaemic; haemorrhage was practically absent; the popliteal artery was occluded by clot and was closely adherent to the surrounding tissues. Further dissection showed thrombosis of the anterior and posterior tibial vessels.

Microscopical examination yielded findings similar to those recorded in the paper referred to.

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