47. Prolonged Cerebral Circulatory Interruption under Extremely Profounded Regional Hypothermia by means of Isolated Cerebral Vascular Irrigation

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48 adult dogs are used for this experimental study. At first surface cooling is used until body temperature falls to 30°C. Cerebral irrigation by means of about 0°C harmless isotonic solution (PVP Ringer's solution or PVP amino-acid solution) is done from one side of internal carotid artery to opposite side of external jugular vein with 130 mmHg pressure fluid level. Main vessels are all clamped and the connection of cerebral and body circulation is interrupted completely as possible. In this manner within 15 minutes brain temperature goes down to 6-7°C. 1-1½ hours after circulatory arrest all clamps of neck vessels are removed and cerebral blood flow is restarted. Cerebral temperature begins to rise gradually and surface warming is applied for complete returning to normal body temperature. In lapse of 5-6 hours after rewarming they become conscious and look around the surroundings and take a meal by their own accord.

This new technique is applied clinically—3 brain tumor cases are operated and 58 to 96 minutes cerebral circulatory arrest is done successfully. After rewarming these patients gain consciousness and obey simple command easily. No marked deficits of vitalities or mentalities are demonstrated. All cases are discharged uneventfully.

47. Profounded Hypothermia with Use of Selective Brain Cooling

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We are reporting the experimental studies on selective brain cooling in dogs.