efficient. In addition, the differences in anterior and posterior cusp movement were greatly decreased.

15. SODIUM RETENTION ASSOCIATED WITH INTERMITTENT POSITIVE PRESSURE RESPIRATION

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(Introduced by E. Sherwood Jones)

Patients treated by IPPR were given a diet containing 50 mEq of sodium and 1.4 l of water. After a few days of IPPR, the urinary sodium fell to less than 10 mEq/l, but oliguria did not occur. Some chest radiographs showed enlarged hilar and opacities in the lung fields. A diuretic caused a natriuresis and rapid resolution of the X-ray changes. The relationship of these findings to 'Respirator Lung' are discussed.

16. RAISED L-GLUTAMATE AND 2-OXOGLUTARATE CONCENTRATIONS ASSOCIATED WITH CHRONIC HYPERCAPNIA AND HYPOXÆMIA

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L-Glutamate and 2-oxoglutarate have been measured in whole blood by enzymatic methods in a variety of disorders and in normal controls. The normal range was 0.08–0.22 μmol/ml (mean 0.16±0.01) for L-glutamate and 0.002 to 0.020 μmol/ml (mean 0.010±0.001) for 2-oxoglutarate.

Elevated concentrations were found in patients with respiratory disease associated with chronic hypercapnia and hypoxaemia. In twenty-nine of these patients in whom arterial Pco2 levels were ≥50 mmHg and mean arterial Po2 47-4 mmHg, the mean L-glutamate level was 0.50±0.23 μmol/ml and the mean 2-oxoglutarate 0.028±0.015 μmol/ml. The high L-glutamate concentrations were not always associated with a raised 2-oxoglutarate level.

2-Oxoglutarate was relatively evenly distributed between intra-cellular and extra-cellular compartments but red cells had a higher concentration of L-glutamate than plasma.

Acute correction of hypercapnia and hypoxia by artificial ventilation did not alter the concentrations of the two compounds.

There were no consistent changes in L-glutamine, L-aspartate, pyruvate and L-lactate.

Raised L-glutamate levels were also seen in patients with polycythæmia, anaemia and congestive cardiac failure and raised 2-oxoglutarate levels in a variety of disorders including congestive cardiac failure, anaemia, hepatic failure and malignancy.

17. PEPTIDE CHAIN SYNTHESIS IN UNSTABLE HAEMOGLOBIN DISEASES

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Patients with unstable haemoglobins are heterozygous for the abnormal protein, but the concentration of the abnormal haemoglobin in their blood ranges from 5% to 40% of the total haemoglobin. This may be due to either a reduced rate of synthesis or preferential loss of the abnormal polypeptide chain or both. It has been suggested that in Hb-Hasharon and Hb-Köl n there is a reduced rate of synthesis.

In the present investigation, the relative rates of synthesis of the abnormal and normal polypeptide chains have been measured in four patients two of whom had Hb-Köl n. The results indicate that in all patients the rates of synthesis of the normal and abnormal polypeptide chains were identical. In the case of Hb-Köl n the abnormal chains consist of two fractions; one of these is highly unstable and is lost rapidly from the cell while the other is relatively stable and is incorporated into the Hb-Köl n tetramer.