

Comp. Physiol., 1942) these changes could be prevented by the administration of atropine. These changes in renal clearances with diving reveal that the renal circulation is involved in the arterial constrictor response instead of representing a separate phenomenon of diving in the seal.

Function of Inferior Vena Caval Valve of the Seal (Phoca Vitulina)

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Assumptions have been made in the past that the inferior vena caval valve (IVCV) of the seal constricts during diving to pool blood in the hepatic sinuses and abdominal veins as a reservoir to use while submerged. This would seem not to be an advantage to the seal since most of the cerebral blood flows must return via the extradural vein to the abdominal veins. In order to evaluate the timing of constriction of the IVCV a cannula was threaded up the extradural vein to the level of the neck of the seal. Albumin I-131 administered into a foreflipper vein appeared from the cannula in 20 to 25 seconds whether the seal was diving or not. When the isotope was administered into the renal venous plexus it appeared from the cannula in 25 seconds when diving but was delayed in appearance when the seal was out of water. The data indicate that the IVCV constricts when the seal is out of water. This would fit the suggestion that the IVCV serves to prevent pulmonary congestion when the head is above water.

Observations on the Arterial Constrictor Response To Diving in the Seal (Phoca Vitulina)

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Young harbor seals were trained to dive on a teeter board with the cephalad portion of the body submerged during the diving periods. They learned to dive in this manner for 10 minute periods without struggle or other evidence of fright. Changes in extradural vein blood lactic acid concentrations and oxygen content at 4 minutes of diving, and observations of small webb arteries were used as indices of function of the arterial constrictor response to diving. At 4 minutes of normal trained dive there was no increase in blood lactic acid concentration and little decrease in oxygen content. After I.M. atropine or I.V. tetraethylammonium chloride there was no reflex bradycardia to diving and blood lactic acid concentration increased with the blood oxygen content markedly reduced at 3 minutes of diving. Pilocarpine, given I.V. after the tetraethylammonium chloride but