

ANOMALOUS POST CAVAL VEINS IN A CAT.

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ABSTRACT—“*Anomalous Post Caval Veins in a Cat.*” A description is presented of an adult Cat with paired Post Caval Veins, Vena Cava Posterior or Inferior. These extend, without any other anastomosis, anteriorly, to a point between the two kidneys, and from there continue as one vessel. This point of fusion is three and one-half inches anterior to the usual junction of the leg vein, Iliacs. The left ovarian vein joins the left one of the Post Cavæ at a level posterior to the kidney of that side, instead of being a continuation of the left renal vein. The Ureters extend from a dorso-lateral to a ventro-lateral position between the paired Post Caval veins. This blood vessel pattern is interpreted as the “AD” type of Huntington and McClure, the main feature of which is the persistence of embryonic Post Cardinal veins. A labeled photograph accompanies this described variation.

Unusual blood vessels, representing persistent embryonic channels, have received special study in recent years. However, Reagan, in a recent review, ('29), has shown that not merely in our time, but at intervals during the last century, important discoveries and interpretations have been made on the eutherian vena cava. Paired post caval veins, (vena cava posterior or inferior) have been observed in several patterns as related to the aorta and ureters. From their own researches, and observations of other anatomists, Huntington and McClure ('07, '20, and '29) list seventeen possible vascular anomalies of this part of the body in mammals. Darrah ('07) found one particular anomaly in twenty out of 605 cats. All of these had paired caval veins, but six of them did not continue the common Iliac trunks on anteriorly to the kidney region without anastomoses. According to Huntington and McClure ('29), their figure 25 shows the only case of this pattern of blood vessels that has been reported for man. That case was in a fetus (from Gladstone, '12, Figure 8).

An atypical arrangement of the veins, arteries and ureters has recently been found in the Comparative Anatomy Laboratory at the University of Illinois, Urbana. From a group of five doubly injected and embalmed cats, one adult female was found with long paired post caval veins. The blood channels from the posterior limbs, the iliac veins, do not fuse until they reach a point between the two kidneys. This place of union

is three and one-half inches anterior to the usual junction. The ureters arise dorso-lateral to, and pass between the caval veins to a ventro-lateral position. Also, the left sex vein, (ovarian vein), joins the left one of the paired post cava somewhat posterior to the level of the kidney. The veins extend laterally, along with the corresponding arteries, but their origin is posterior to that of the arteries. Otherwise, the cat appeared normal.

The research of Huntington and McClure, especially, provides a rather clear-cut explanation, as far as it goes. The capillary plexus on the venous side has been found by these authors, and others, particularly for the cat and human to early develop into paired longitudinal veins of a variable extent and duration. Figure one of their memoir, '29, is a "composite diagram of embryonic veins of the domestic cat (*Felis domestica*) based on a detailed study of the development of the veins." A similar figure appears in their paper of '20. One pair of these longitudinal embryonic channels is known as the post-cardinal pair. Ventromedially to these are the subcardinal vessels. Dorsomedially to the post cardinals are the paired supracardinals. By the dropping out of certain ones of these, or parts of a given one, the persistence of others, and connections with a venous ring in the region of the kidneys the different atypical conditions are accounted for.

This unusual, but apparently functionally normal condition is placed under the "AD" type of Huntington and McClure, '29. It represents the persistence of both posterior cardinal veins of the embryo, instead of the right supracardinal vein, which forms the normal vena cava posterior (inferior) of the cat and man. Apparently this specimen closely resembles one of the Darrah series of cats, that one illustrated by Huntington and McClure, '29, figure 20, in diagnostic characteristics. That this is the "AD" type is evident from the position of the Ureters with reference to the caval blood vessels, and further by the sex vein connection. This latter is interpreted to represent a part of the right and left subcardinal channel. The developmental history of these veins may not be so simple as here postulated. Reagan, '29, page 208, closes his review of the literature on this subject by stating that, "The formation of the vena cava is a much more complicated process than any existing account would indicate."

However, these observations record another atypically paired vena cava posterior (post cava), and refer to the pair, tentatively, as persistent embryonic post cardinal veins. The cat is preserved at the University of Illinois. Figure one is a labeled photograph of this variation.

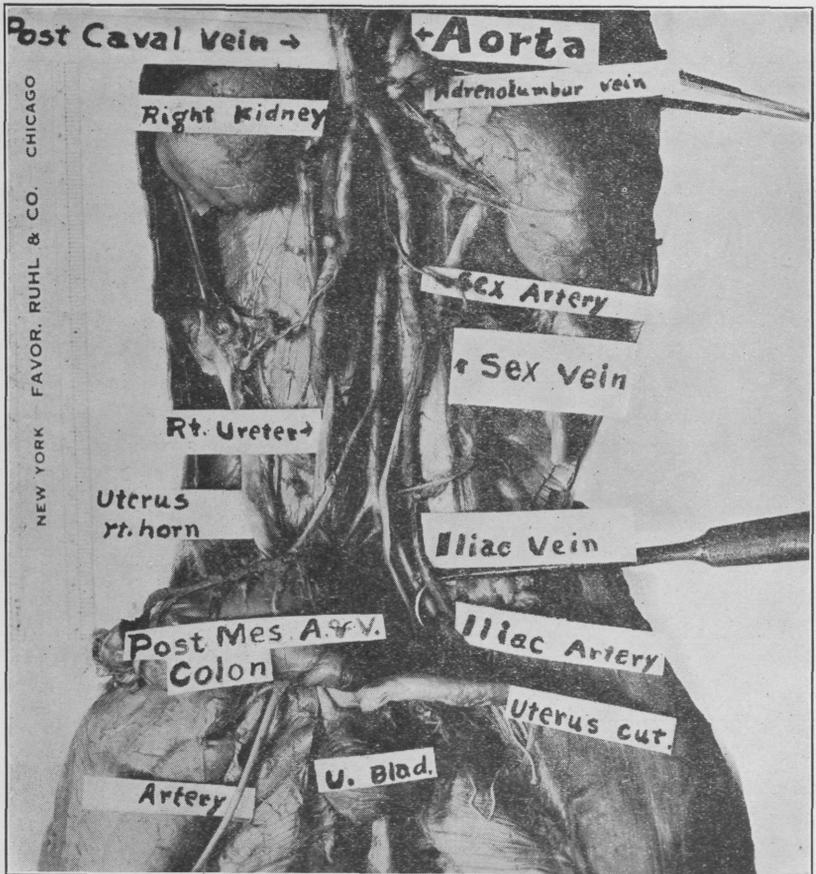


FIG. 1. CAT—Type "AD" Post Cava (Vena Cava Posterior), showing persistent embryonic post cardinal veins.

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