Anatomical And Histological Studies The Development Of The Skull Of An Egyption Bird

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The present study deals with the development of the chondrocranium and the eye as a sense organ of Columba livia domestica. This was accomplished through studying of six developmental stages. The following interesting points are elucidated.The development of chondrocraniumThe first indication of the cartilaginous skull, 20 mm total body length embryo, was the acrochordal cartilage. It appeared as a small mesenchymatous mass containing intercellular deposits, which lies directly behind the hypophysis cerebri. It shows an accelerated chondrification in the early ontogeny. Later the acrochodral cartilage undergoes resorption process. The notochord is completely embedded in the acrochordal cartilage. The course of the notochord through the acrochordal cartilage is not the same. it has two courses through the acrochordal cartilage; the first is a dorsal position (cerebral one) at the anterior part of acrochordal while the second is a central course at the posterior part of the acrochordal cartilage.In the second stage of stage of Columba, 24 mm total body length embryo, the chordal region includes the following elements; the acrochordal cartilage, the basal plate, one occipital condyle and two occipital arches. The acrochordal cartilage takes a pear-shape. The basal plate of the present stage takes a dome like shape. Lonely occipital arch is established on the lateral border of the posterior part of the basal plate. The lordosis phenomenon is pronounced. This phenomenon takes place when the notochord changes its position from a central position, through the basal plate, into the cerebral one through the acrochordal cartilage.Summary 2011100The stage III of Columba, 32 mm total body length embryo, shows great development of the chordal region. Beside the acrochordal cartilage and the basal plate were subjected to change in shape and structure, there are other elements such as pila antotica and the posterior orbital cartilage were appeared.The basal plate and the acrochordal cartilage have an apple-shaped structure. The medial part of the posterior edge of the basal plate projects posteriorly to give an occipital condyle. The two occipital arches of the present stage become well chondrified. These two arches take an oval shape. But the line between them and the lateral border of the basal plate is determined by presence of three hypoglossal foramina.The acrochordal cartilage grows in lateral direction to become rectangular in shape. One of the most obvious characters of the present stage is the development of the pila antotica. There is no separate center of chondrification for the origin of pila antotica. At the same times, pila antotica proceeds its spreading laterally to develop

another element that is the posterior orbital cartilage.The lordosis phenomenon in the present stage becomes more obvious. The notochord is completely embedded in the basal plate due to the great thickness of the latter cartilage. During its passing through the lordosis region it tends to change its position from the central to the cerebral one in the region of the acrochordal cartilage. Then it projects outward from the anterior edge of the acrochordal to extend in the hypophseal incisure. Again, in the posterior region of the basal plate and the occipital condyle, the notochord takes a central course.The auditory capsule consists mainly of two parts, the anterior cochlear portion and the posterior canalicular one. Each part of the auditory capsule chondrifies from a separate center of chondrofication. Three fissures are existedSummary 2011101between the elements of the auditory capsule -themselves and the side walls of the basal plate region. The first one is the cochleo canalicular fissure which represents the wide distance between the two elements of the auditory capsule. The second one is the incisura prootica. It develops between the cochlear portion and the posterior edge of the pila antotica. The third fissure is the fissure metotica. It situates between the cochlear part laterally, the posterior wall of the pila antotica anteriorly and the lateral wall of the basal plate medially.The first appearance of the prechordal region is represented by the deposition of five elements. These are paired trabeculae cranii, paired anterior orbital cartilages, single median intertrabecula, paired polar and suprapolar cartilages.The first appearances of the visceral arch skeleton (viscerocranium or splanchnocranium) appear. It is represented only by the dorsal and the ventral components of the mandibular arch. The dorsal component represents the anlage of the quadrate cartilage, while the ventral one is considered as that of Meckl’s cartilage. This stage also show, the presence of an elongation process arises from the medial edge of processus orbitalis of the quadrate cartilage. This is the quadratopolar commissure which acts as a connection between the quadrate cartilage (viscerocrainum) and the polar cartilage (neurocranium).In the fourth stage of columba, 40 mm total body length embryo, the basal plate becomes more chondrified. The medial posterior edge of basal plate is increased in its thickness to develop only one occipital condyle.The acrochordal cartilage is subjected to regression in its size. The expansion of the acrochordal in lateral direction gives the pila antotica. The notochord passes completely free from the acrochordal cartilage and becomesSummary 2011102uncovered. The notochord passes through the whole length of the basal plate. It takes a central position and projects through both the basicranial fenestra. The lordosis phenomenon becomes less pronounced than before.