the immune system, in particular, the killer activity of lymphocytes during uveitis remains poorly known, which was the goal of our study.

During this study, a clinical, hematological, microbiological and pathoanatomical examination of 75 young cattle at the age of 9-15 months, a patient with fibrinous uveitis, was carried out. It was determined that an increase in the content of K-cells in the blood during the first two stages of affection of the patient with fibrinous uveitis of streptococcal etiology in young cattle can be considered as an antimicrobial protection, while an increase in the content of killers in the third stage of the disease is due to effector activity, with resorbtion of the lens.

Keywords: streptococcal uveitis, eye, cattle, killer activity, lymphocytes, K cells, tractus uveus, hemato-ophthalmic barrier

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SPECIFIC FEATURES OF THE ILLIAC MUSCLE OF PREDATORY BIRDS

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Abstract. *Interest in the occurrence of a bird's flight flew into the background the study of the adaptation of the pelvic fins of birds. It fully concerns both the skeletal elements and the muscular system of the femur leg. It should also be noted that the initial studies of this issue have shown extremely specific characteristics of the structural elements of the area of the hip joint. This in turn suggests that studies of the pelvic fins of birds are relevant and almost not studied. A paticulary important aspect of research of this issue is the establishment of valid principles and mechanism for the development of the femur of the thigh, taking into account the specific features of locomotion.*

In this article biomorphological features of the hip joint muscles of predantory birds (white–tailed eagle, common buzz, golden eagle, small hawk, merlin, winter path, andy condor, rhino owl, white owl, eary owl, tawny owl, barn owl) are outlined. It was established that the representatives of this series of degrees of differentation of muscles of the hip joint area due to the stepping type of the bipolar locomotion, as well as the biomorphological festures of the static, which in turn imposes certain imprints on the degree of development of each individual muscle of the hip joint. Also fix points are detailed, presence or absence of porosity is determined. In addition, in order to determine the

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degree of muscles and muscle groups development, each muscle was weighed. It was found that the extension of muscles of the hip joint of the white–tailed eagle requires considerably greater effort than bending, and of the golden eagle, big hawk, twist and the buzzard, on the contrary, the balge louding during static and locomotive fulls on the bend.

Nightly and daytime predantory birds differ not only in the way of life (night or day),body weight ,but also in various manipulations of the limbs, in paticular during hunring for the prey, the force of the extremity during the attack and the method of capture by the claws imposing certain imprints on the development of hip joint bones.

Keywords. biomorphology, hip joint, muscles, birds, white–tailed eagle, common buzz, golden eagle, small hawk, goshawk, merlin, winter path, andy condor, rhino owl, white owl, eary owl, tawny owl, barn owl

Introduction. The rather weak cognitive interest of researchers to the pelvic limb of the pianist at the end of the past and the first thirdof this century is due to the lesser role of its evolutionary transformations in the formation of the biological specificity of birds as a class of vertebeates, because researchers were more interested in the structure of the thoracic limb and the mechanics of flying of birds. In this connection, it is not surprising the fact ghat even in the mist voluminous of the ever performed works of the morphology if birds, monographs of M. Furbringer, only separative pages of the second volume are devoted to the late morphological characteristics of the skeleton of the pelvis and the free limb of the representatives of the class of birds, therefore the study of muscles of birds in a comparative aspect was not carried out [1-5].

Methods of resesrch. The work was performed at the department of animal anatomy, histology and pathomorphology named after academican V. G. Kas'janenko of National University of Life and Environmental Sciences of Ukraine.Tge study was conducted on a fixed by 10% formalin solution of the corpses of some predatory birds, namely: white–tailed eagle, common buzz, golden eagle, small hawk, merlin, winter path, andy condor, rhino owl, white owl, eary owl, tawny owl, barn owl.

The results of research. The group of illiac muscles is the most mussive, because during stato–licomotion the greatest load falls on this area.

Among the group of illiac muscles, caudal illio–swivel (m. illiotrochantericus caudalis) of the studied falconiformes and owlformes is located throughout the lateral surface if the illuac bone. This muscle of the investigated predatory birds, starts musculary from the dorso–cranially wing of the illiac bone. Ends of the falconiformes on the cranio–lateral surface, of owlformes–in the lateral surface of the proximal epiphysis of the femoral swivel. On the lateral surface of the muscle the initial aponeurosis is marked. Among the falconiformes ending of the muscle is different, in particular ,the merlin, white–tailed eagle, golden eagle, winter path have broad and thick tendon, the goshawk, smal hawk and buzzard–wide but thin tendon. By the degree of development among daytime predantory birds, the most powerful present muscle is of tge merlin (144,0 %),and the weakest of the white–tailed

eagle (32,7 %).Among the nightly predatory, the most developed of the grey owl (60,4 %),and the least –of the home owl (50,0 %).In the most of the studied birds, the caudal illuac–swivel muscle is double–breasted, but of the golden eagle and grey owl is also longitudinally–fibrous (fig. 1).

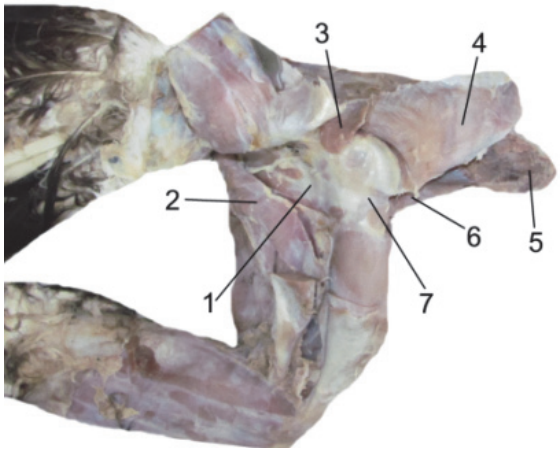

Fig. 1. The muscles of the white–tailed eagle's hip joint (lateral surface): *1* – schiato–femoral muscle; *2* – taily–femiral muscle; *3* – external illiac–swivel; *4* – caudal illuac–swivel; *5* – illiac bone; *6* – cranial illiac–swivel muscle; *7* – femur bone

The cranial illiac–swivel muscle of daytime and nightly predatory birds was firstly described by Aldrovandi (1599), who gave the name m. primus femoris (first femoral muscle), Stenon (1673) calls it m. quintus femoris (the fourth femur muscle). Wiedemann (1802) and Tiedemann (1810)call this muscle like m. glutaeus magnus (a large schiatic muscle), then it was named m. glutaeus medius, maximus et minimus (Owen, 1835; Gurtl, 1840; Reid, 1835). Several names were given by Gadow (1880, 1882, 1891), namely: m. iliacus externusposterior et m. iliotrochantericus posterior, bu they also do not correspond to the points of fixation. He was supported by Hudson (1973), Fleming (1966), McGowan (1979), Howell (1938), Fisher (1946) – call this muscle as m. glutaeus profundus. Only in the 70–90's of the twentyth century Raikow (1985, 1987, 1993), Swierczhewski (1977), Berman, Raikow (1982), Berman (1984), McKitrick (1991) et Rudge, Raikow (1992) gave it a name m. illiotrochantericus caudalis, this name is also supported by us, as it corresponds to its actual fixing points. Although some resesrchers considered it as m. illiotrochantericus medius and m. illiotrochantericus posnius (Stallcup, 1954).

Cranial illiac–swivel muscle (m. illitrochantericus cranialis). In all investigated species topographically this muscle begins from the caudal half of the distal edge of the illiac bone and ends on the lateral surface of the distalhalf of the femur bone's swivel (fig. 2). The muscle ends with a short and thin tendon of the most of the studied species, and only home owl has musculo–tendonary ending. It should be noted, that the muscle of the golden eagle is differentiated into two legs–cranial and caudal.

Among the studied falconiformes cranial illiac–swivel muscle reaches the greatest development of buzzard (14,6 %), and the least of the white–tailed eagle (5,1 %). The most developed present muscle among owlformes is of the eary owl

(20,9 %), and the least of the barn owl (11,0 %). In the internal structure of the cranial illiac–femoral muscle are certain differences. In the majority of investigated falconiformes and owlformes birds it is longitudinally–fibrous, and only of the golden eagle–double–breasted, and of the home owl–single–breasted.

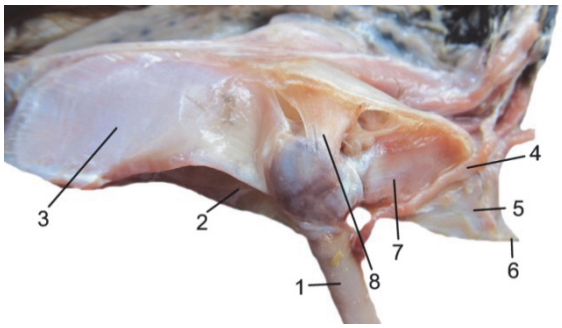

Fig. 2. The muscles of the grey owl's hip joint (laterally surface): *1* – femur bone; *2* – cranial illiac–swivel muscle; *3* – caudal illiac–swivel muscle; *4* – taily–femoral muscle; *5* – schiatic bone; *6* – pubic bone; *7* – schiato–femoral muscle; *8* – external illiac–swivel muscle

The cranial illiac–swivel muscle was firstly described in the 90's if the fifteenth century by Aldrovandi (1599), who calls it m. secundus femoris. Only in the seventeenth century Merem (1781) renamed this muscle into m. iliacus minor. Wiedemann (1802) suggested to call this muscle in his research like m. iliacus anterior. The next researchers considered it as m. glutaeus medius (Tiedemann, 1810; Reid, 1835; Gurtl, 1849), somebody m. gluteus minor (Owen, 1835; d'Alton, 1837), and also m. glutaeus minimus (Owen, 1849; Watson, 1883; Shafeldst, 1890; Miller, 1937). Beddurt (1899) and Gadow (1882), called it m. glutaeus tertius et m. iliacus externus anterior. In the end of the eighteenth century some researchers called it illiac–swivel, but the front – m. illio–trochantericus anterior (Gadow, 1891a; Witvhell, 1901; Hoff, 1966; Gaunt, 1969; Vanden Berge, 1970; Raikow, 1970; McGowan, 1979). Howell (1938), Fisher (1946) and others gave it name of m. iliacus. Berger (1953) – m. iliotrichantericus cranialis. Only from the end of the nineteenth century this muscle began to call like m. illiotrochantericus cranialis (Vanden Berge, 1975). Many scholars of that time supported him (Mauer, 1977; Swierczewski, 1977, Berman; Raikow, 1982; McKitrick, 1985; Rudge, Raikow, 1992), and we support it, as this name clearly corresponds to its topography.

External illiac–swivel muscle (m. iliotrochantericus externus) of the investigated birds begins musculary from the dorsal crest of the illiac bone and ends on the dorso–caudo–lateral surface of tge swivel of the femur bone. This muscle of the most investigated species ends tendonary, but of buzzard, merlin, winter path, hawks, white owl and home owl this tendon is short and wide, and of barn owl, esry and grey owl–thin and long. This muscle of the white–tailed eagle and golden eagle has musculo–tendonary ending and is double–breasted. The muscle of small hawk and all of the investigated owlformes – is single–breasted, of the rest of falconiformes–longitudinally–fibrous. The degree of tge development: the most powerful among the

falconiformes this muscle is of small hawk (3,6 %), and the weakest of the white–tailed eagle (1,6 %). Among the owlformes degree of this muscle ranges from 2,7 % of barn owl to 0,3 % of grey owl.

Aldrovandi (1599) suggested to call this muscle like m. tertius femoris, this name held up to the begining of the eighteenth century. Only Owen(1835) and de Man (1873) renaimed it to m. glataeus (maximus) .Similar studies continued to be engaged by Gadow (1880) and Miller (1937), while were suggesting to change the name to m. glutaeus anterior. Later, Gadow (1882a) called it m. glutaeus quartis, and then suggested (1891a) m. iliofemiralis externus. This name was supported by many morphologists: Berman (1894), Raikow (1985), McKitrick (1991; 1993) and others. Taking into account the topographic features of the muscle, Mitchel (1905) and Vanden Berge (1975) assigned this myscle the name – m. trochantericus externus, we also agree with this name. Howel (1938), Fisher (1946), Berger (1956), Holmes (1963), Klemm (1969) called it m. piriformis. The name m. glutaeus medius et minimus sounds in the works of Hudson (1948), Fleming (1966), Raikow (1970) and many others, but such names do not correspond to its topographical features.

The internal illiac–femoral muscle (m. illiotrochantericus internus), among the investigated daytime predatory birds is inherent to merlin, white–tailed eagle, golden eagle, small hawk, winter path, buzzard. Among nightly predators it was found only in the grey owl. It begins musculary on the medial surface of the proximal end of the femur bone. Among the falconiformes it is the most developed of the merlin (14,9 %), and the least of white–tailed eagle and buzzard (0,5 %). In the grey owl – 1,9 %. The muscle is longitudinally–fibrous.

This muscle Stenon (1673) called m. undecimus femoris only in the begining of eighteenth century. Wiedemann (1802) and Tiedemann (1810) called this muscle like m. flexor femoris profundus. d'Alton (1837), Gurtl (1849), Oweb (1849) and others suggested the name m.iliacus internus. Miller (1937), Hudson (1937), Hoff (1966), Raikow (1970) and many others called this muscle like m. iliacus. Watson (1883), Beddard (1884) assigned it the name m. pectineus, and Gadow (1880, 1882) called it m. iliacus internus. Later Gadow (1891a) described it like m. iliofemoralis internus, he was supported by Marshal (1905), Mauer (1977), Berman, Raikow (1982), McKitrick (1985, 1991), Rudge, Raikow (1992a), we also support this. Mitchel (1901) described it like m. iliofemoralis internus s.pectineus, and Howel (1938), Fisher (1946), Berger (1956), Klemm (1960) and others like m. psoas.

Disscusion.

1. The degree of development of individual muscles and muscle groups, acting on the hip joint, their differentation, due to the action of functional loads, lifestyle (night or day), body weight, snd also various manipulations of the limbs, in paticular during hunting for prey, the force of the extremity during the attack on it and the method of pinching clows, that imposes certain imprints on the development of the pelvic limb bones.

2. Correlation of the mass of the illiac muscle to the body weight of falconiformes is to 0,9 %,and of the owlformes – to 0,6 %,which is explained by the hunting for bigger prey.

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ВИДОВІ ОСОБЛИВОСТІ КЛУБОВИХ М’ЯЗІВ У ХИЖИХ ПТАХІВ

Н. В. Друзь, Є. І. Залоїло

Анотація. *Зацікавленість виникненням пташиного польоту перемістила на задній план вивчення адаптації тазових кінцівок птахів. Це в повній мірі стосується, як скелетних елементів, так і м’язової системи ділянки стегна птахів. Необхідно відмітити і те, що розпочаті дослідження цього питання показали надзвичайну видо-специфічність структурних елементів ділянки тазостегнового суглоба. Це, у свою чергу, свідчить, що проблематика дослідження тазових кінцівок птахів є актуальною і майже не вивченою. Особливо важливим аспектом таких досліджень є встановлення дійсних принципів і механізмів розвитку ділянки стегна птахів, враховуючи видові особливості локомоції.*

У даній статті викладено біоморфологічні особливості м’язів тазостегнового суглоба представників хижих птахів (орлан-білохвіст, канюк звичайний, беркут, малий яструб, великий яструб, кречет, зимняк, андський кондор, горобиний сич, біла сова, вухаста сова, сіра сова, сипуха). Встановлено, що у представників даного ряду ступінь диференціації м’язів тазостегнового суглоба обумовлений крокуючим типом біпедальної локомоції, а також біоморфологічними особливостями статики, що, у свою чергу, накладає певні відбитки на ступінь розвитку кожного окремого м’яза тазостегнового суглоба. Також виявлено точки фіксації, визначено

наявність чи відсутність перистості. Крім того, з метою з'ясування ступеню розвитку м'язів і м'язових груп, кожен м'яз зважували. Встановили, що розгинання м'язів тазостегнового суглоба у орлана білохвостого потребує значно більших зусиль, ніж згинання, а у беркута, яструба великого, кречета та канюка, навпаки, більше навантаження під час статики та локомоції припадає на згиначі.

Нічні та денні хижі птахи відрізняються між собою не лише способом життя (нічний та денний), масою тіла, але й різноманітними маніпуляціями кінцівок, зокрема, під час полювання на здобич: силою виносу кінцівки під час нападу на неї та способом захвату кігтями. Все це накладає певний відбиток на розвиток кісток тазової кінцівки.

Ключові слова: біоморфологія, тазостегновий суглоб, м'язи, птахи, орлан-білохвіст, канюк звичайний, беркут, малий яструб, великий яструб, кречет, зимняк, андський кондор, горобиний сич, біла сова, вухаста сова, сіра сова, сипуха

ВИДОВЫЕ ОСОБЕННОСТИ ПОДВЗДОШНЫХ МЫШЦ В ХИЩНЫХ ПТИЦ

Н. В. Друзь, Е. И. Залоило

Аннотация. *Заинтересованность возникновением птичьего полета переместила на задний план изучение адаптации тазовых конечностей птиц. Это в полной мере касается как скелетных элементов, так и мышечной системы участка бедра птиц. Необходимо отметить и то, что начатые исследования этого вопроса показали чрезвычайную видо-специфичность структурных элементов участка тазобедренного сустава. Это, в свою очередь, свидетельствует об актуальности исследования тазовых конечностей птиц и низкой изученности этих вопросов. Особенно важным аспектом таких исследований является установление действительных принципов и механизмов развития области бедра птиц, учитывая видовые особенности локомоции. В данной статье изложены биоморфологические особенности мышц тазобедренного сустава представителей хищных птиц (орлан-белохвост, канюк обыкновенный, беркут, малый ястреб, большой ястреб, кречет, зимняк, андский кондор, воробьиный сыч, белая сова, ушастая сова, серая сова, сипуха). Установлено, что у представителей данного ряда степень дифференциации мышц тазобедренного сустава, обусловлена шагающим типом бипедальной локомоции, а также биоморфологическими особенностями статики, что, в свою очередь, накладывает определенные отпечатки на степень развития каждой отдельной мышцы тазобедренного сустава. Также выявлены точки фиксации, определено наличие или отсутствие перистости. Кроме того, с целью выяснения степени развития мышц и мышечных групп, каждая мышца была взвешена. Установили, что разгибание мышц тазобедренного сустава в орлана белохвостого требует значительно*