

Histopathological alteration in Testies and ovaries of species *Hotanta tumulus* from Malakoli region Nanded district (Maharashtra)

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Key words: - Distortion, pycnosis, mesovarium, hemorrhage, karyolysis.

Abstract:-Scorpion follow fossorial mode of life for managing adoptive character. So it is very difficulties in operation during summer. In some invertebrate animal histopathological study throughout to year is difficult due to non-availability of animal. So it is need to study what changes are occurs while summer why death rate is more in summer is try to study by using histological study of more than 200 animal and found conclusion.

Introduction:

Live scorpion specimens were studied with respect to various criteria like morphology, anatomy, histology, etc. Histology is an important branch of biology which deals with study of cells and tissue. It helps determining the action of toxicants or pollutants on the body tissue of organism and their adverse effects. Histopathology deals with the study of pathological changes induced in the microscopic structure of body tissue. Any particular alteration of cell may indicate the presence of disease or the effect of toxic substances. In scorpion it is observed that external organs are affected due to toxic chemicals causing erratic, movement loss of equilibrium increased fungal infection and lesions on head and cephalothorax finally leading to death. Due to fungal infection whitish mass is deposited over body surface. It may disturb bodily functions and cause death. It may be attributed to significant damage caused to the internal organs such as liver, muscle; heart, intestine, book lungs etc.

Thus, histopathological study gives useful data concerning changes in tissue prior to external manifestation. Numerous histopathological changes have been reported in scorpion exposed to a variety of pollutants.

Toxicants impair the metabolic & physiological activities of the organism. Physiological study alone does not give a complete understanding of pathological condition of tissue under toxic stress. Hence, present investigation was undertaken with a view to study the histopathological changes in vital tissue.

Material & Method:

A laboratory acclimated animal was anaesthetized and used for all the primary observations and kept in a dissecting tray having dorsal surface upwards. Freshly collected healthy animals were selected for histopathological study. They were dissected and tissue like Integument, hepatopancreas, book lung, heart, intestine, testis, and poison gland separated from animal immediately.

The tissues were fixed in aqueous Bouin's fluid for 24 hours and then processed through graded series of alcohol, cleared in xylene and embedded in paraffin wax. Sections of 6 μ thickness were cut and stained with Hematoxyline and Eosin and later on screened and photographed by micro photography.

A] Histopathological procedure before block preparation.

Wash the tissue in bouins fluid in 24 hours and lithium carbonate washing for two minute then washed in different grades of alcohol like 30%,50%,70%,90% and 100% for 24 hours each.

B) Procedure after block preparation (double staining procedure)

Fix the material on slide with fresh egg albumin, wash in tap water for two minute and stain in hematozylene for two minute. Destain the slide in acid water and wash in tap water each for 2 minutes. Dehydration is made in 30, 50, 70 % alcohol for 5-10 minutes each and stain in eosin for two minute. Further dehydration is carried out in 90 and 100 % of alcohol each for 5 – 10 minutes. Clear the slide in xylol or clove oil for 1-2 minutes and mount in DPX immediately.

The slides are dried and washed with xylene and cleared. The clear slides are screened and photographed by microphotography.

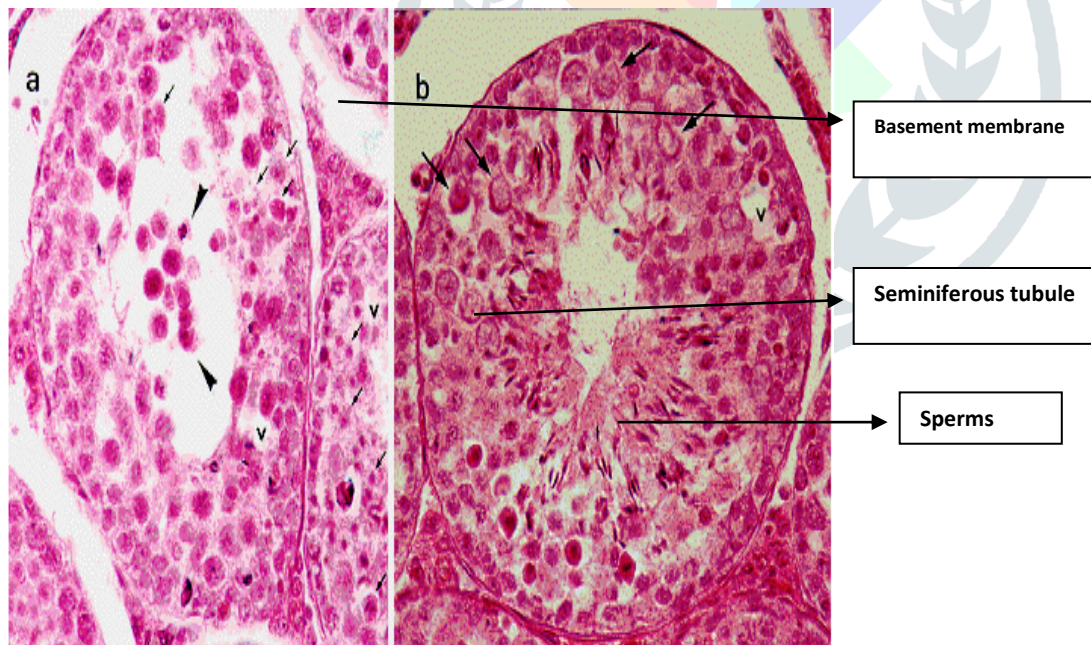


Fig. No. 1 Histology of testis A) Basement membrale

B) Seminiferous tubule C) Empty space D) Germinal epithelium

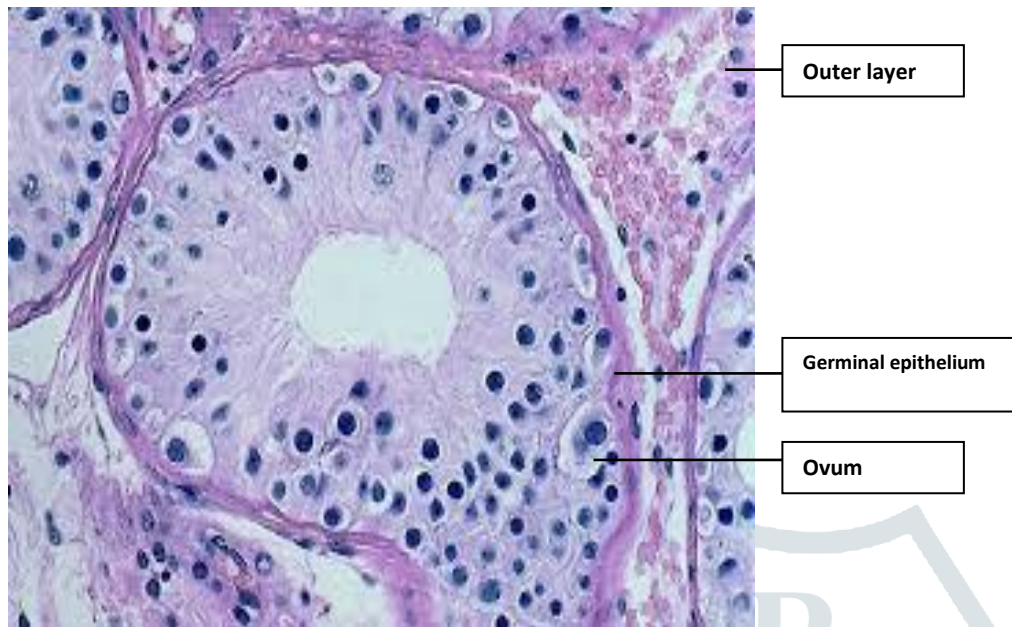


Fig.No. 2 Histology of Ovary.

Observation and results:

Fig. 1 shows the histological structure of testis consisting of number of seminiferous tubules which are connected to each other by connective tissue and nerve fibers. Germinal epithelium is inside the basement membrane, which is divided by septa into different lobule. There is irregular lumen in center with different developing stages of sperms. Sperms are found in bunches in lumen. Spermatozoa are motile having round head and long tail. During summer, excessive degeneration and vacuolization of seminiferous tubule occurs as well as distortion of spermatids and pycnosis of spermatogenic cells are observed. The secondary spermatocyte shows clumped nature indicated by darkly stained groups on the inner of seminiferous tubule. In *Hotantatamulus* testis the normal lobular structure with spermatogonium is observed. In summer necrosis of lobule boundary, hemorrhage and visible spermatogonium in cells is observed in testis. *Vijayakumari* (1979), investigated the histopathological impact of sub lethal concentration on gonads of both sexes.

Ovary is the female reproductive organ which is paired elongated sac like structure lying in abdominal cavity ventral to kidney. They are attached to the body wall by means of mesovarium. Both male and female reproductive gonads undergo marked cyclic morphological and histological changes before reaching full maturity. The gamete releases from the transverse and longitudinal layer of germinal epithelium of ovary and pushes into ovarian follicle. The histological assessment of ovary in scorpion is very important diagnosis tool for checking reproductive capacity as well as health status. The histological observation concludes the reproductive capacity of female as well as the future production of embryos.

Fig. 2 shows the histological structure of ovary of scorpion. It shows outer 2-3 layered squamous epithelium cells and inner to it are germinal epithelial cells which undergo process of oogenesis and form ova. These ova come out from transverse and longitudinal fibers and grow as embryo up to birth in ovarian follicle. The inner wall of ovary is growing in the form of diverticuli, in which embryo pushes during development.

Discussion:

Ahson R.K(1974), observed that blocked spermatogenic activities at the secondary spermatogenic stage cause pycnosis, vacuolation and dehydration. *Shukla S.P and Pandey*(1982), showed inhibited activity of spermatogenesis at spermatid level due to DDT, BHC etc. *Lakhani Vand Pandey A*(2002), reported to have observed atrophied sperm mother cells and spermatocytes enlarged and polygonal. *Patwardhan A*(1998), reported rupture of mature sperm cyst wall, separation of sperm from Sertoli cells and irregular spermatocytes and some time irregular changes in seminiferous tubules. *Ruby S.M.* (1979), observed reduced state of sperm development and damaging spermatogonia in juvenile male and rainbow trout.

Shukla S.P and Pandey (1982), observed the rupture of testicular lobule in tropical perch. *Pundir R. and Saxena A.B.* (1990), reported damage of testicular tissue by hemorrhage and necrosis of silver barb. *Walsh J.H. and Robin W.E.* (1975) mentioned atrophy of hypospermia, necrosis of cellular boundary, hemorrhage, congestion. *Tafanelli R.C* (2006), stated exhaustion atrophy, general atrophy, hypospermia, vasodilatation in testis of gold fish.

Lesniak J.A, and Ruby P (1982), reported the decreased maturation of oocyte due to water pollution in fishes. *Tafanelli R.C.* (2006), observed hyperplasia of germinal epithelium involution some ova decreased frequently of oocyte maturation cytoplasmic clumping, fragment and karyolysis of ova in ovary of gold fish. The hyperplasia of germinal epithelium and involution of ova decreased frequently oocyte. *Abdel Wahab A.*(1957), stated that fragmented ova with abnormal shape, arrangement were observed in spotted murrel.

Chandrasekhar Reddy (1979), reported that in ovary of *Heterometrus fulvipes* a small outgrowth called diverticuli in which later develops embryo. *Sreenivasa Reddy* (1963), reported that if fertilization occurs in January to March may result in development of large number of embryos. Here in ovary and ovariole high number of ova or embryos is recorded up to 90 and more than it in our selected species *Hotantatamulus*. In contaminated environment germinal epithelium of ovary wall undergoes necrosis as a result oocyte formation is retarded, *Zha B.K.* (1974); *Kulkarni G.K*(2001), studied histological of arthropods. *Banocroft C and Gambe G.D*(2002), studied histopathology of Bothridae.

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