ORIENTATION OF THE EMBRYONIC MASS IN THE BLASTOCYSTS OF THE EMBALLONURID BAT, *TAPHOZOUS MELANOPOGON*

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THE topographical relationship of the implanting blastocyst to the maternal uterus is constant for a species, and in many groups for the entire family and sometimes for the entire order[1-3]. However, recent reports on this aspect of the embryology of several bats have revealed that the orientation of the embryonic mass during implantation varies not only among different members of the family[4,5] but amongst different members of the same species[4,6,7], while this phenomenon appears to be common among the more primitive families[8-11] the orientation is practically constant for the family in the more advanced families[12-14]. Amongst Pteropidae the embryonic mass is located mesometrially in *Cynopterus marginatus*[8] and *Cynopterus sphinx gangeticus*[10], it faces the tubo-uterine junction in *Rousettus leschenaulti*[11] and it is initially lateral becoming mesometrial in later stages in *Pteropus giganteus*[9]. In all the above species the final placenta is, however, invariably located mesometrially. Amongst the Microchiroptera, a lateral to mesometrial orientation of the embryonic mass has been reported in Rhinopomatidae[15], Emballonuridae[16], Rhinolophidae[17] and Hipposideridae[18]. In Desmodontidae and Vespertilionidae the embryonic mass is invariably antimesometrial in position[14,12,13,17,1].

The extensive work on the embryology of Indian bats carried out in this laboratory has revealed that the orientation of the embryonic mass differs in different species of certain families. Thus, variable orientation, during implantation has been reported in *Megaderma lyra lyra*[6] and *Hipposideros fulvus fulvus*[4]. Since, in both these species the final placenta occupies a mesometrial position it was suggested[6,4] that the embryonic knob may rotate within the blastocyst as has been reported in the mouse blastocyst[19,20] until it finally occupies its definitive position during later stages of development. A variable orientation of the disc in implanted blastocysts was observed in eight specimens of *Rhinolophus rouxi*[17]. According to the author, the theory of rotation of the embryonic mass was not tenable in this case since the blastocysts were in advanced stages of implantation and the embryonic disc had already become flattened.

While studying the embryology of *Taphozous melanopogon* six blastocysts at different stages of implantation were available for examination. Among three of these, which had just established contact with the uterus circumsferentially, and in which the trophoblast had replaced the uterine epithelium on all the sides, the embryonic mass was slightly lateral to antimesometrial in one (Fig. 1), lateral in another (Fig. 2) and between lateral and mesometrial sides in the third. Amongst the two advanced implanted blastocysts, which had a proamniotic cavity in their embryonic mass, the orientation of the embryonic mass was antimesometrial in one (Fig. 3) and lateral to antimesometrial in the other (Fig. 4). At the prochordal stage of development the embryonic plate was facing between the antimesometrial and the lateral side of the uterus (Fig. 5).

FIGS. 1–5. Photomicrographs to illustrate variable orientation of the embryonic mass in the blastocysts during different stages of development in *Taphozous melanopogon*. All arrows point mesometrially (Figs. 1–4, × 10 and Fig. 5, × 7).

In *Taphozous melanopogon*, as in *Taphozous longimanus*[12], the final placenta is lateral with the mesometrial moiety becoming converted into an haematoma. Thus, in this species as in *Rhinolophus rouxi*[17], the concept of the rotation of the embryonic mass within the blastocyst should be ruled out in the implanted blastocysts. Probably the formation and enlargement of the exocoelome and the expansion of the embryonic plate may so orient the embryo that space becomes available for the allantois to grow and fuse with the placenta on its definitive position irrespective of the orientation of the early embryonic mass. This concept should also explain the unusual situation noticed in *Tadarida brasiliensis cynocephala*[21] in which the embryonic disc is antimesometrial whereas the allantoic placenta is formed on the mesometrial side.

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SPONTANEOUS EPIDERMAL NEOPLASM IN FRESHWATER AQUARIUM FISH *XEPHOPHORUS MACULATUS* (GUNTHER)

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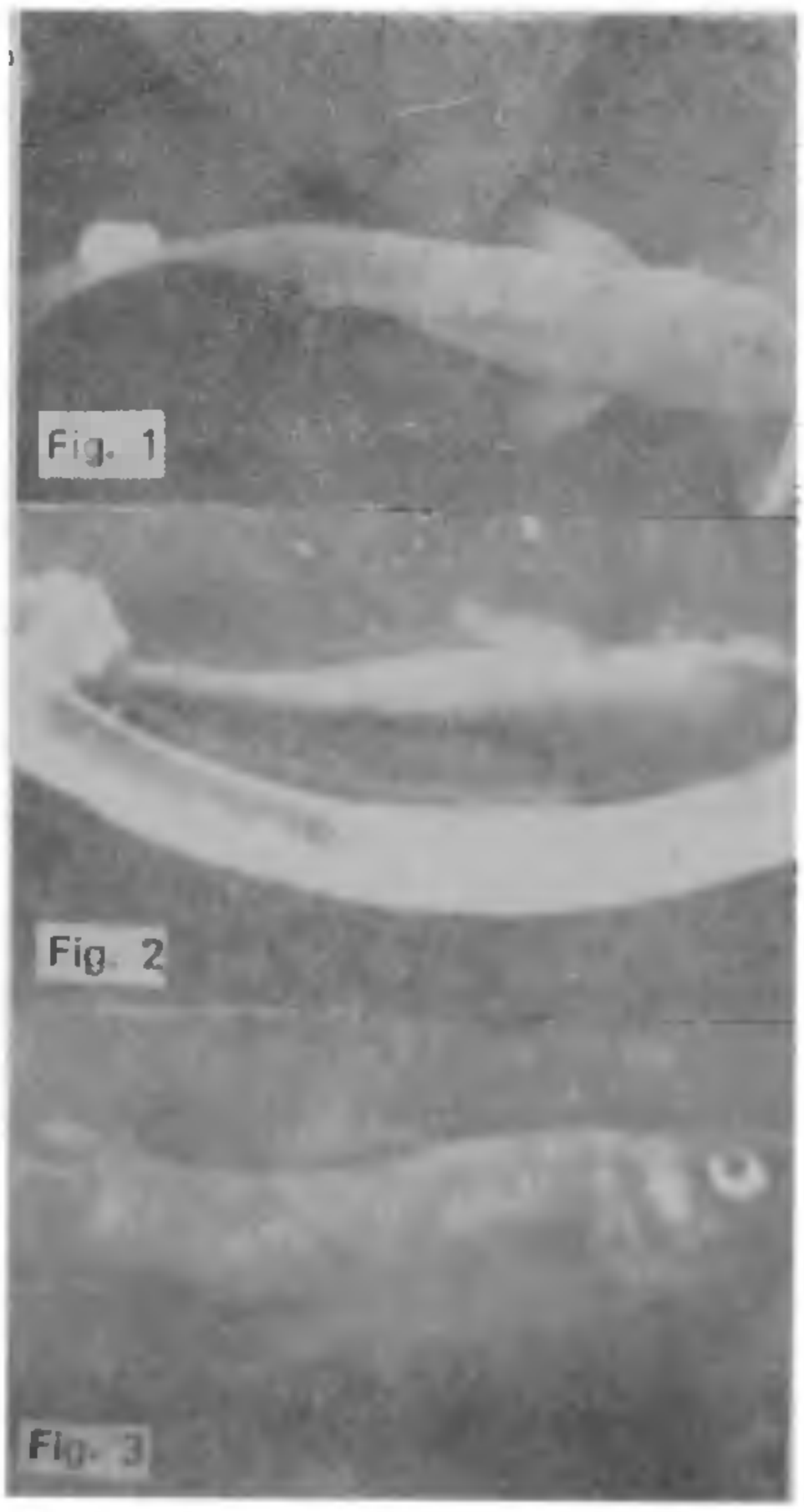
The incidence of spontaneous neoplasm in teleosts is largely concentrated in five families: the Salmonids, Cyprinids, Codfishes, Flatfishes and Flounders. These families constitute a major portion of fish consumed by man, they are caught in large numbers and inspected. Epidermal papillomas have also been encountered with considerable frequencies in several species of pleuronectid fishes such as *Hippoglossoides elassadon*, *Parophyrus vetulus*, *Platichthys stellatus*[1]. Similar lesions have been regularly observed in large numbers of the reef fish "slippery dick" *Irridio bivittata* by Lucke[2]. Keysselitz[3] also observed the epidermal papillomas on the lips or barbels, *Barbus fluviatialis* and Breslauer[4] reported papillary tumors of the lips, buccal mucosa and fins of smelt, *Osmerus eperlanus*. But there is no report of this type from India and this is the first report of this type from this country.

A freshwater aquarium fish *X. maculatus* was brought to the aquarium in October 1978. It was fed with Daphnia dry food daily in the morning at 8 A.M. and Hydrilla plants were planted in the aquarium. In July 1979 a creamish white spot appeared at the caudal end on the left side of the body of the fish. This spot gradually increased in size and became cauliflower-like in appearance and on 20th September 1979 it measured 2 mm in the fish which measured 46 mm in length (Fig. 1). Due to excessive cellular



Figs. 1-3. Fig. 1. Cauliflower-like tumor on 20-9-1979. Fig. 2. Fully grown tumor on 20-4-1980. Fig. 3. Post-operative photograph.