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Curvature Deformity of Vertebral Column in Adult *Channa straita* (Snakehead) from River Indus near Jamshoro Sindh,Pakistan

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Abstract:-*Channa striata* commonly known as Solor Mundho, the fish under study was collected from River Indus Sindh near Jamshoro. The adult specimen was thoroughly studied through x-rays and radiograph.Fishhave showed the sign of lordosis at different regions at the thoracolumbar vertebrae.The radiography of this region showed the deformity at the thorax vertebrae number eighteen up to thirty two, next bend starts from thirty two to thirty nine and last bend starts from the vertebrae of forty to forty six. The abnormality of fish is due to contaminated water or due to mechanical injury during the period of embryonic development.

Keywords: Lordosis, Sol, Radiography, Vertebral Column.

1. INTRODUCTION

The genus *Channa* is regarded as predatory belongs to familyChannidae, locally called as Shakur or Mundho, these are indigenous fish to the sub-continent Asia.They are abundant almost in each and every type of freshwater environment.The hardy and air-breathing*Channa*with less bones and unique flavor make them staple food for the number of Asian countries (Chandio *et al*., 2020). To complement the information of abnormalities come across in the fishesan abnormal fish *Channa straita* from commercial purpose caught by fisherman of River Indus has been reported.

Various skeletal deformities like vertebral fusion, bent-jaw,lordosis and abnormality in opercula. Furthermore, rare complex of spinal cord abnormality containing of a successive duplication of scoliosis, kyphosis (LSK) and lordosis starts from the head up to the tail fin has been reported by various authors (Jafri *et al*. 1998 in *Rita rita* and Narejo *et al*., 2007 in *Cirrhinus mrigala*. Several environmental factors have been associatedwith these abnormalities, such as nutritional imbalances (tryptophan or vitamin C deficiency, vitaminD or excess content of tyrosine) (Nacario 1983; Akiyama *et al*. 1986a,b; Hinton *et al*. 1992; Kanazawa*etal*.1992;McConnellandBarrows1 993)hydrodynamic and culture conditions (water quality, pesticides and other chemistry agents) (Chun *et al*. 1981; Faustino andPower 1997).

2. MATERIAL AND METHODS

During the period of research collection at River Indus, 8-10-2020 a single fish *channa striata* (snake headed), observed with crooked deformity of vertebral column, the fish was caught by fisherman.Then this fish was brought to the lab for further investigations and findings.The length of fish was measured on a measuring board in mm and weight was recorded. The X-ray radiography was done in ultrasound laboratory.

3. RESULTS

The crooked vertebral columned fish *Channa striata* was collected by fisherman from River Indus.This specimen was brought from collection site then was thoroughly studied through x-ray radiograph.The collected fish has a sign of lordosis,the bending of vertebral column of thorax region **(Fig.1).(Fig.2)** shows the deformity at thejunction of 32 vertebrae.This deformity of fish may be due to mechanical injury, due to which the thoracic vertebral column become crooked.Research shows that this abnormality is not due to hereditary in origin.

4. DISCUSSION

Increasein skeletal distortions is not well assumed and clear that either these are related with environmental,genetic factors and due to malnutrition (Fernadez *et al.* 2008). It may bepersuadedthrough the pre or post embryonic stage. Numerous investigators have suggested a diversity of nutritional factors and biotic andabiotic parameters of habitat (Jafri *et al*.,1998; Takeuchi *et al*., 1998; Kihara *et al*., 2002; Haga

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et al., 2003; Sfakianakis *et al*., 2006; Narejo *et al*., 2007; Cobcroft and Battaglene, 2009; Georgakopoulou *et al*. 2010) as significant in the development of skeletal deformities. Generally it is accepted that skeletal deformities can be environmentally induced in two ways a) by neuromuscular effects, which can lead to vertebral column deformities without changing its chemical composition and b) by altering the necessary biological processes for maintaining the biochemical integrity of bone (Divanach *et al*., 1996).

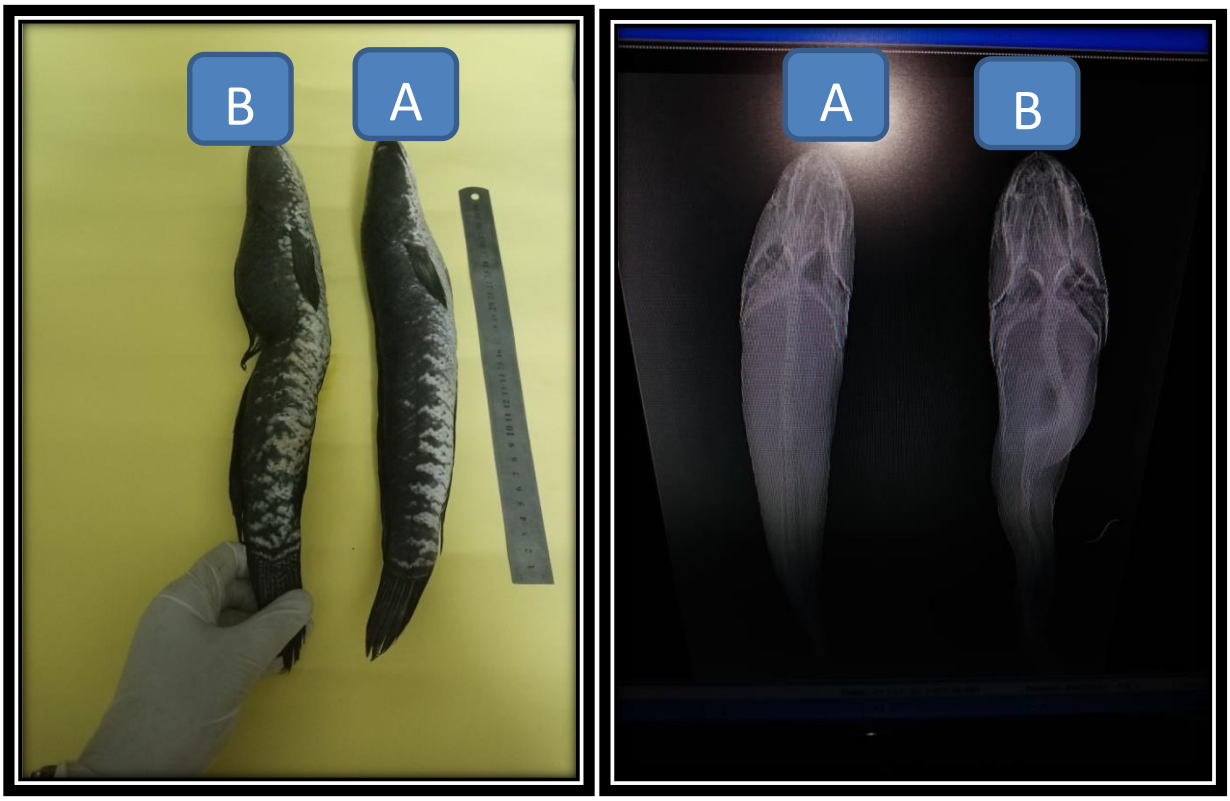

Fig.1.and Fig. 2 vertical view of radiograph

Table.1 Comparison body parameters between normal and abnormal *Channa striata*

Body parameters	Normal *Channa striata*	Abnormal *Channa striata*
Body weight (cm)	450	556
Body length (g)	42	42
Fork length(cm)	3.3	3.5
Standard length(cm)	35	35.2
Tail length(cm)	6.1	08
Body girth(cm)	17.5	19.1
Head length(cm)	10.4	12.4
Eye diameter(cm)	1.6	1.5
Gape of mouth(cm)	4.5	4
Post orbital(cm)	9.5	10
Length of dorsal fin(cm)	22.5	23
Base of dorsal fin(cm)	19.2	20.2
Length of pectoral fin(cm)	05	6.9
Base of pectoral fin(cm)	2.1	2.3
Length of ventral fin(cm)	3.5	04
Base of ventral fin(cm)	1.6	2.2
Length of anal fin(cm)	14.1	15
Base of anal length(cm)	12.2	12.5

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