Prevalence of Anisakid Larvae in Marine Fishes Sold in Shenzhen, China

1, 2, 3M. X. Chen, 1, 3J. X. Chen, 1, 3Y. G. Ye, 1S. T. Gao, 1Y. J. Geng, 1D. N. Huang, 1, 3X. H. Li, 1R. L. Zhang, 1, 3X. Q. Zhu and 1M. J. Xu

1Shenzhen Center for Disease Control and Prevention, Shenzhen 518020, China
2National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, Shanghai 200025, China
3College of Veterinary Medicine, South China Agricultural University, Guangzhou 510642, China
4State Key Laboratory of Veterinary Etiological Biology, Key Laboratory of Veterinary Parasitology of Gansu Province, Lanzhou Veterinary Research Institute, CAAS, Lanzhou 730046, The People’s of Republic China

Abstract: The aim of the present investigation was to examine the prevalence of anisakid larvae in marine fishes sold in Shenzhen in March to November 2008. A total of 394 individual fishes representing 40 fish species were obtained from different wholesale markets. They were examined for the presence of anisakid larvae by examination of the viscera and whole body cavity. About 23 species of fish (57.5%, 23/40) namely Decapterus maruadsi, Harpodon nehereus, Muraenox cinereus, Trichiurus haumela, Pneumatophorus japonicus, Sebastodes schlelegi and so on were found to be infected with anisakid larvae with an overall infection rate of 31.0% (122/394). The results of present investigation demonstrated the risk of human infection with anisakid larvae in Shenzhen, China which have implications for implementing control strategies against anisakid infection in humans in China.

Key words: Marine fishes, anisakids, market, prevalence, Shenzhen, China

INTRODUCTION

Anisakiasis is a human gastrointestinal parasitosis that results from accidental ingestion of infective larvae belonging to the family Anisakidae. Anisakids have a global distribution among a wide variety of marine fish species. The prevalence of larval anisakids in some northern hemisphere fisheries has increased currently and infection of sea fish with anisakids causes significant economic losses to the fishery industry due to the apparent increase in prevalence and intensity and subsequent condemnation of infected fish (Rohlfing et al., 1998; Abollo et al., 2001). For example, the presence of anisakid larvae on and in the viscera and flesh may impact upon visual aesthetics and the market value and parasite removal adds to product cost whilst further reducing its attraction to consumers (Farjallah et al., 2006; Soliz et al., 2006; Zhu et al., 2007; Rello et al., 2008).

More importantly, it is well known that larval anisakids of some genera such as Anisakis, Contracaecum and Pseudoterranova can cause eosinophilic granuloma at the gastrointestinal wall and elicit various clinical manifestations of acute abdomen in human in lots of countries (Adams et al., 1997; McCarthy and Moore, 2000; Couture et al., 2003; Chai et al., 2005; Lee et al., 2006). Actually, there is a marked increase in the prevalence of human infection with anisakid larvae worldwide in the last two decades (Chai et al., 2005). Since the first reports confirming the pathogenic effect of Anisakis species in humans (Van Thiel et al., 1960), there has been increasing awareness of fish-borne parasitic diseases (Smith and Wootten, 1978; Olson et al., 1983; Dred et al., 1991; Kijewska et al., 2009; Farjallah et al., 2006). Infection of sea fish with anisakid larvae has been documented as a severe problem for fishery industry in China (Ma et al., 1997; Zhang et al., 2007; Li et al., 2007) which poses public health concerns. But there have been no official reports of the human cases of anisakid infection in China in the literatures this may be because that the physicians do not know anisakiasis and which is usually diagnosed as other diseases by mistake. In order to provide relevant base-line data for the better control of anisakid infection in marine fishes and for assessing the risk of human infection with anisakids, the objective of the
present investigation was to estimate the prevalence of anisakid infection in marine fishes sold in market in Shenzhen, China by post mortem examination.

MATERIALS AND METHODS

About 394 marine fishes of 40 species were obtained from different wholesale fish markets in Shenzhen, China. The whole body cavity and viscera of each fish were carefully and thoroughly examined for the presence of anisakid larvae. Nematode specimens were counted, fixed in hot 70% ethanol. They were identified as anisakid larvae at generic level based on the host and tissue from which they were derived, the geographical origin of the host/parasite and the morphology of the parasite (Olson et al., 1983; Nascetti et al., 1993; Orecchia et al., 1994; Mattiucci et al., 1997).

RESULTS AND DISCUSSION

Of the 394 fish individuals representing 40 fish species examined, 23 species of fish (57.5%, 23/40), namely Decapterus maruadsi, Harpodon nehereus, Muraenoxo cinereus, Trichiurus haumela, Pneumatophorus japonicus, Sebastodh schlegeli and so on were found to be infected with anisakid larvae with an overall infection rate of 31.0% (122/394) (Table 1). The anisakid larvae found represented Anisakis and Hysterohlycium. No anisakid larvae were found in other 17 fish species (Table 1). In the investigation, the highest prevalence of anisakid larvae occurred in D. maruadsi (100%) and H. nehereus (100%) while the lowest prevalence of anisakid larvae occurred in P. argenteus (9.1%). Almost all of the parasites were found encapsulated in the body cavity or free in the body cavity. The infection rate of anisakid larvae in marine fishes in the present investigation was higher than that in sea fish caught from the Yellow Sea (Zhang et al., 2007). Nevertheless, in China, the severe prevalence of anisakid infection in sea fish has received little attention in the last years, possibly because human infection with anisakids has not been officially documented in scientific literature, although it has been reported in the media.

CONCLUSION

The high prevalence of anisakid larvae in marine fishes sold in market indicates the potential of human infection and represents a risk for public health in Shenzhen and elsewhere in China. Moreover, Shenzhen is a metropolitan city of 1,952 km² and has a population of approximately 10 million it shares a border with the Hong Kong Special Administrative Region, China in the south. Various raw or uncooked food such as sushi and cisheng are consumed by people in Shenzhen and Hong Kong.
daily. Therefore, it should be aware of the risks of human infection with anisakids and integrated strategies and measures should be taken to reduce or eliminate such risks.

ACKNOWLEDGEMENTS

This research is supported by the Program for Changjiang Scholars and Innovative Research Team in University (Grant No. IRT0723) to XQZ and China Postdoctoral Science Foundation (Grant No. 20090460064) to MJX.

REFERENCES


