MARSH BULLETIN

Microsporidian sp. protozoa parasite of the *Trypauchen vagina,* Goobiidae fishes in Iraqi marine water, Arabian Gulf.

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Abstract

On the survey of the parasitic protozoa of Iraqi marine fishes, five fish species (*Sillago sihama*; *Liza subviridus; Saurida undosquamus*; *Synaptura orentals* and *Trypauchen vagina*) were collected and examined. One of 82 *Trypauchen vagina* (Bloch and Schneider, 1801) Goobiidae (1.219%) fish was being found naturally infected with ***Microsporidian*** cysts, as a mass embedded in the Internal and external skeletal muscles and gill, the logical explanation for this situation is the high intensity of infection, the infection noted during the winter season and appeared as whitish cylinders' cyst tumor-like masses up to 2-4 cm in diameter, spores were elongated and measured (1.5–1.9 µm) × (1.2-2.0µm). Fish was suffering a pathologic observation, extensive damage tissue, including epithelial necrosis, encapsulation, and the presence of spores encysted and adult in skeletal muscles of fishes causing lesions including mild hyperplasia of fibrous connective tissue around the parasite. The current study targeted the protozoan parasites in the Iraqi marine waters for several reasons, including a lack of sufficient information in the region is available for this type of parasites

Keywords: Microsporidian, a protozoan parasite, *Trypauchen vagina* fish, Arabian Gulf.

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Introduction

*Microsporidian*s are unicellular protozoan obligate parasites infecting wild groups of invertebrates and vertebrates. Recent studies considered it fungi Hibbett, *et al.*, 2007. *Microsporidia* parasite produces masses of the Xenomas in a wild organism, such as Oligochaetes, Insects, Crustaceans, and fishes (Lom and Dyková, 2005). *Trypauchen vagina* is a marine, and brackish water fish lives in the salty and muddy bottom. Reduced eyes that are entirely covered with skin, and the anterior portion of its head are protected by thick flesh (Fish base). Most studies on the protozoan parasite of fish are reporting on freshwater, and very little attention on the marine vertebrate, therefore it is important to view the increasing

Knowledge of the marine fishes. The present investigation finding of *Microsporidian* sp. consider newly recorded in the Iraqi marine water of the Arabian Gulf. The current study targeted the protozoan parasites in the Iraqi marine waters for several reasons, including a lack of sufficient information in the region available for this type of parasite.

Materials and methods

Freshly of 300 fish specimens belonging to five different species (*Sillago sihama*; *Liza subviridus; Saurida undosquamus*; *Synaptura orentals* and *Trypauchen vagina*) of marine fish of the Iraqi marine water were collected and examined for protozoan parasitic infectious, during the year 2018, Fish samples were collected by fishing boats, Northwest Arabian gulf. Fishes were transported to the parasite lab. the vertebrate department, marine science center, university of Basrah. Laboratory examinations were performed on the primary parasites through a survey of the skin's outer wall and internal infection. Spores were examined by using an oil immersion lens. Micrographs were taken by using a Zeiss microscope equipped with a Canon digital camera. Fishes were identified according to (Carpenter *et, al.*, 1997).

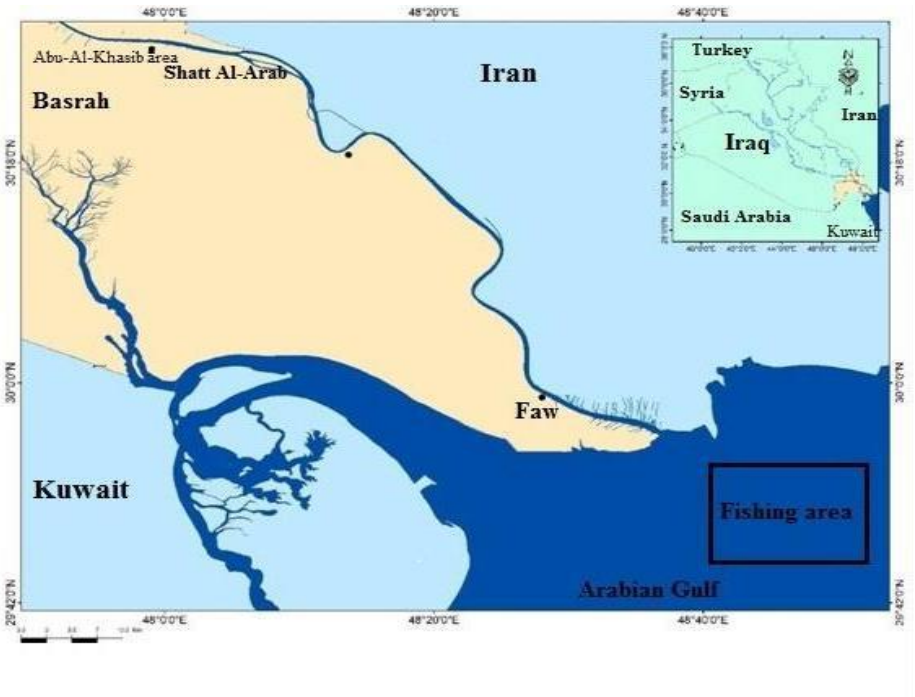

Fig 1 photograph, study area, Iraqi marine coastal water, Arabian Gulf. (29°58,33, N48°28, 20E) (Bannai, 2018).

Results

Fish was being found naturally infected with the *Microsporidian* cysts, the infection was found as a mass embedded in the Internal and external skeletal muscles and gill. The logical explanation for this situation is the high infection intensity in the host, the infection noted during the winter season. It appeared as whitish

cylinders' cyst tumor-like masses up to 2-4 cm in diameter (fig-2 (1-3). The pathology observations appeared that a fibrous layer encapsulated parasitic sac filled with mature spores.

The spores were released by rupture of tumor masses, cysts covered by a dense envelope, spores are elongated to ovoid with a posterior to midpoint vacuole measured (1.5–1.9 μm) × (1. 2- 2.0) in size, each spore contains a posterior vacuole (PV) which is considered as the main constituent of mature spores 4,5 X = 400; 6,7 X=1000; fig 2 (4-7). Isolated is showing the Xenoma wall. The infected with the *Microsporidian* sp. was spread adult fish of the *Trypauchen vagina* fish during winter; the intensity of infection was very low (1.219 %). The semi-thin section of parts of the cyst from the peritoneal cavity of *Trypauchen vagina* fish xenomas showing sporophorous vesicles. The xenoma is surrounded by the xenoma wall (XW) formed by a layer of fibrillary material surrounding numerous mature spores (S) fig- 3.

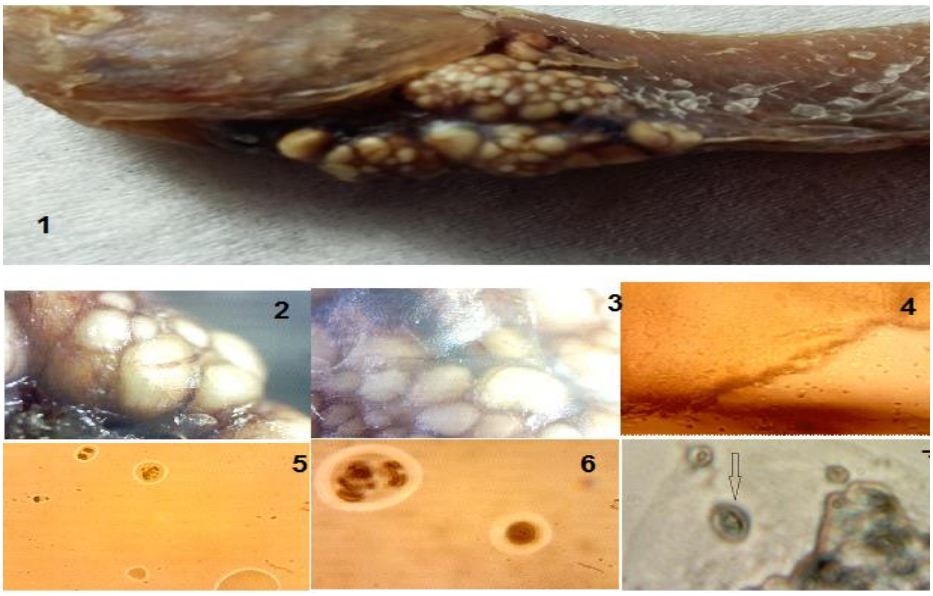

Fig. 2 Photograph of (1,7) Trypauchen vagina (Bloch and Schneider, 1801) infected with Microsporidian sp. parasites (4,5,6,7) perform spores of the Microsporidian, 4,5 X = 400; 6,7 X=1000; (2,3) Isolated is showing the Xenoma wall.

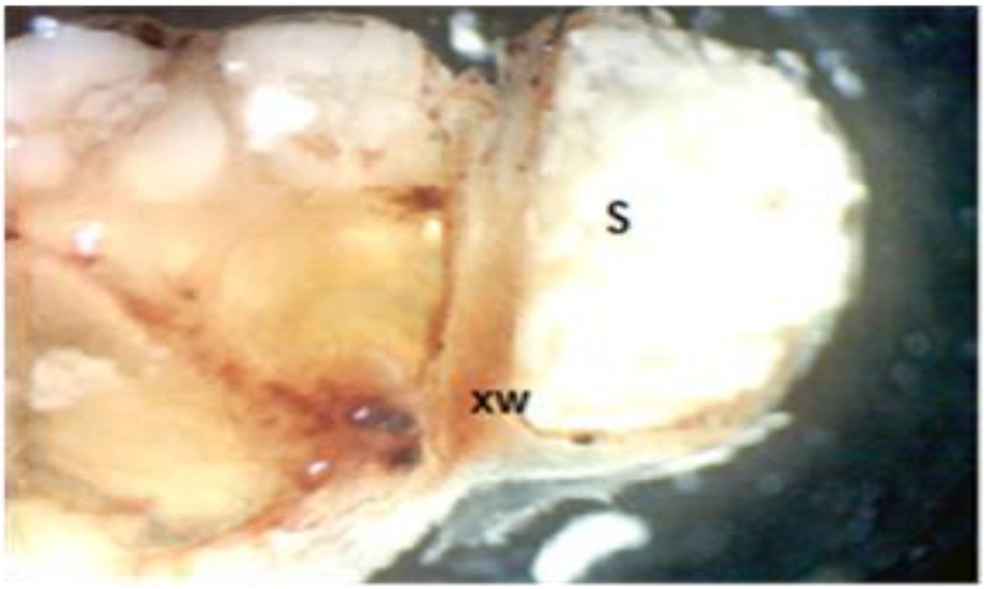

Fig 3 Photomicrograph of a semi-thin section of parts of the cyst from the peritoneal cavity of *Trypauchen vagina* fish xenomas showing sporophorous vesicles. The xenoma is surrounded by the xenoma wall (XW) formed by a layer of fibrillary material surrounding numerous mature spores (S) and sporonts. × 400

The gross pathological observation showed extensive damage to the host tissue, including epithelial necrosis, hemorrhaging, parasite encapsulation, and the presence of spore encysted and adult in skeletal muscles of fishes, causing lesions including mild hyperplasia of fibrous connective tissue around the parasite.

More than 43 *microsporidian* spp. have been registered in the infect and crustaceans, whereas at least 23 *microsporidian* spp. registered in shrimp, most of the infections are in the muscle tissue, digestive tract, and reproductive organs (Sprague *et al*., 1999).

The identification of the *Microsporidian* spp. parasite is based on the spores' morphological characteristic structure, and the Xenomas are one of the important characteristic diseases in fish, and other organisms, including crustaceans and insects.

The main character obtained for the parasite is consistent with those of Kabata (1959) that he suggested a small posterior vacuole is the main character of the species. The most important results obtained from the present study through this kind of parasites are breaking down the cells due to massive inflation in host prepare fissile alboghiat through the process of reproductive divisions in infected cells and tissues. These results are consistent with the proposed result by Lom and Dykova (2005), who found that the Microsporidia causing Xenoma in fish offers insight into cell pathology. The infection in the winter season in the current study with microsporidians ship was agreed result (Lom and Dykova, 1992). Casal et al., (2008) suggested that the number of Microsporidian parasite infections may be increased when water temperature declines.

The *Microsporidian* parasites in the fish species examined revealed the presence of whitish Xenomas or cysts. Some authors recorded similar observations (Casal *et al.*,2008; Stephens, 2009).

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الطفيلي الابتدائي .*Microsporidia* sp المصيب لسمكة *Trypauchen vagina* (Bloch and Schneider, 1801) Goobiidae, في المياه البحرية العراقية

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الخلاصة

من اجل دراسة تجمع الطفيليات الابتدائية في الاسماك البحرية العراقية. خمسة أنواع من الأسماك (*Sillago*) *sihama*; *Liza subviridus; Saurida undosquamus*; *Synaptura orentals* and *Trypauchen vagina* (Bloch and Schneider, 1801) Goobiidae قد جمعت وفحصت .سمكة واحدة من اصل 82 *Trypauchen vagina* وجدت على انها مصابة بشكل طبيعي بالطفيلي الابتدائي .*Microsporidian* sp بنسبة اصابة 1.219%) 'الاصابة التي سجلت هي اكياس مغروسة في طبقة البشرة القناة الهضمية والتجويف البروتوني للأسماك المصابة, ظهرت السبورات متطاولة الى بيضاوية الشكل وتمتلك الفجوة في الجزء الخلفي والتي هي الفة التصنيفية للسبورات .كانت حجم السبورات تتراوح (1.2-2.0µm) × (1.5–1.9 µm) measured . وأظهر الفحص العياني المرضي للأسماك المصابة على شكل أضرارا بالغة بأنسجة المضيف، بما في ذلك نخر في الجهاز العضلي وتكيس. استهدفت الدراسة الحالية طفيليات البر وتوزوا في المياه البحرية العراقية لعده أسباب منها نقص المعلومات الكافية في المنطقة المتاحة لهذا النوع من الطفيليات

الكلمات المفتاحية: الطفيلي الابتدائي،Microsporidian , سمكة *Trypauchen vagina*، *الخليج* العربي