



Fig. 5 : Taenia exhibiting the spherical brown thick - walled ova (arrow) (X 100)

eosinophils in the appendix predominantly in the mucosa are noted except one case with many infiltration in the submucosa and muscular layer. Along with the definite existence of the parasitic body and/or ova, Eab and EG are absent. From this observation, eosinophils should most likely participate in reactive process and the etiologic agent of Eab and EG can be the different one which produces disparate microscopic changes. Even though report of appendiceal wall granuloma from enterobiasis¹¹ is documented, but the granuloma was in the mesosalpinx and not in the submucosa as in this study.

Search in the medical literatures shows various parasitic species involving the appendix, encompassing enterobiasis^{11, 12}, anisakidosis^{1, 3}, angiostrongyliasis^{2, 13}, Strongyloides stercoralis¹⁴ and gnathostomiasis¹⁵. Presence of Taenia ova in the appendix are not found in the current journals. As a common disease in Thailand, the finding of this ova may prevail if more vigorous microscopic search is exerted.

Eosinophilic infiltration is mainly mild to moderate degree with predominant mucosal involvement of both acute and non - acute appendicitis groups of Enterobius and Taenia cases except one Taenia case which had marked infiltration in submucosa and muscular layer. Additionally two incidental appendectomy specimens (case 3, 6, table 2) reveal similar microscopic features to the other cases. These facts confirm the prior

report that *Enterobius* is not the causal agent of acute appendicitis¹². This principle can also be applied to the *Taenia* cases which had similar microscopic findings to those cases of enterobiasis.

Eab and EG can be disclosed simultaneously in two cases (case 6, 7, table 1). Moreover some cases (case 10 - 15, 18 - 22, table 1) with only submucosal Eab and cases with combination of EGON and EGON as well as one case (case 8, table 1) with healed granulomas are demonstrated. These findings are interpreted as the natural course of single entity. Initial appearance of Eab can be followed by EG with and without necrosis and eventually hyalinized healed granuloma occurred, representing the line of pathologic progress.

Although case reports and series of eosinophilic appendicitis and/or granulomas have been well recognized such as anisakidosis, strongyloidiasis, gnathostomiasis, angiostrongyliasis and enterobiasis as described above. The other conditions include cephalosporin hypersensitivity⁴ and eosinophilic gastroenteritis^{5, 6}. Comparable histologic features of eosinophilic abscess and granulomas in this study are in the group of those parasitic infestations. Of particular interest in this analysis is that all eosinophilic granulomas and eosinophilic abscess are present predominantly in the submucosa. Because arterioles, venules, blood capillaries and lymphatic vessels are a prominent component of the submucosa¹⁶. It is highly possible that if a parasite is conveyed via vascular channels, this can result eventually in submucosal eosinophilic abscess and/or granuloma. This postulation is supported by many case reports as in angiostrongyliasis^{2, 13} and anisakidosis^{1, 3}, which also reveal eosinophilic abscess and/or granuloma. Our failure to demonstrate the parasitic body except central amorphous eosinophilic necrosis make it impossible to definitely define the etiologic agent. The central necrosis which may contain the decomposed parasitic body, can stem from the long period between the infestation and the detection of the eosinophilic granuloma. Further more clinical information, larger and advance studies may be required to specify this elusive agent. *Enterobius* and *Taenia* infestations are excluded as the causal agents due to the only appearance of reactive mucosal eosinophilic infiltration and lack of eosinophilic abscess and granuloma which denote the different pathologic process. The other possible causes are minor and sometimes can be diagnosed in combination with the clinical manifestation and laboratory finding such as eosinophilia in eosinophilic gastroenteritis.

Additionally histologic feature of acute and non - acute appendicitis group shows no significant disparity indicating that the causal agent of eosinophilic abscess and granuloma is not the one responsible for acute appendicitis. Besides hyalinized healed eosinophilic granuloma in incidental appendectomy (case 8, table 1) is distinctive and can represent a self - resolving lesion. If accurate preoperative diagnosis is made, the *unnecessary surgical exploration can be obviated*.

Conclusions

A series of eosinophilic abscess and granuloma was analyzed, including 22 patients and correlated with 11 parasitic - infested cases in 869 appendectomy specimens. Only two genera of parasites, *Enterobius* and *Taenia*, were present in the appendiceal lumen and had mild to moderate mucosal eosinophilic infiltration which was interpreted as reactive process.

Absence of Eosinophilic abscess and granuloma in the parasitic - infested appendix lead us to the other etiologic agent which out of submucosal location of the lesions are possibly and most likely the vascular - conveyed parasite. Owing to unsuccessful demonstration of any parasitic body, the other etiology cannot be completely excluded.

Subdivided into acute and non - acute appendicitis groups, both parasitic - infested and eosinophil - infiltrated cases exhibited no significant microscopic differences. Consequently these lesions are likely to be coincidental rather than etiology of acute appendicitis. Unnecessary surgical exploration might be avoided if accurate preoperative diagnosis can be established, hence obviating subsequent complications.

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