

Observation of an Organism Found in Patients with Gestational Trophoblastic Disease and Toxemia of Pregnancy*

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Gestational Trophoblastic Disease 와 Toxemia of Pregnancy

환자에서 발견된 Organism 의 관찰

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임신성영양막질환 및 임신중독증을 가진 환자의 말초혈액과 태반조직에서 다양한 형태를 가진 organism 을 국내에서 처음 발견하여 보고하는 바이다. 이 다양한 형의 organism 은 구충, 회충 및 촌충의 형태적 특성을 가져 아직 계통학적으로는 결정이 되지 않았으나 Lueck 등¹⁾에 의해 *Hydatosi lualba* 라고 칭해지고 있다.

Introduction

Toxemia of pregnancy, a syndrome peculiar to the third trimester of human pregnancy, is also known to occur during the first trimester in patients with hydatiform mole.

An unidentified organism found in the peripheral blood and placentas of patients with toxemia and gestational trophoblastic disease was reported by Lueck et al¹⁾ and will be referred to as *Hydatosi lualba* until the time of taxon-

omic classification; a toxemia-like syndrome was induced in the pregnant beagles by intra-peritoneal inoculation²⁾.

This is an initial report of observation of multiple forms of an organism found in the peripheral blood and placentas from toxemic patients and gestational trophoblastic disease in Korea.

A slightly modified toluidine blue-O-(TBO) staining procedure was used.

These multiple forms of an organism have been observed in the contact smears of 3ml of

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peripheral circulating blood from both groups of patients, from trophoblastic tumor tissue and from placentas of patients with preeclampsia-eclampsia, including cord blood. This paper reports on the morphologic characteristics of these forms.

Materials and methods

This study comprised 2 patients with hydatidiform mole, one patient with choriocarcinoma, 5 patients with preeclampsia, and 2 patients with eclampsia. Additional 30 placentas with unknown history and 23 cases of 3-ml peripheral blood sampling (16 men and 7 women) were also examined.

Specimens were obtained from these patients and prepared as follows. One drop of blood from 3-ml specimens of nonheparinized peripheral blood, one drop of bloody fluid on the surface of trophoblastic tumor tissue, sampled by D & E or uterine suction, and the surface of placentas, including maternal surface, fetal surface, sectioned surface and umbilical cord blood were thickly smeared on each of slides and allowed to air dry. All were stained with TBO.

Additional cases of placentas and peripheral blood specimens were handled and stained in the same manner used above.

Results and comment

Patients. The various forms of the organism being described were found in 2 groups of patients as follows.

In 2 patients with hydatidiform mole, the various forms were found in the contact smear of trophoblastic tumor tissue and peripheral blood in one patient. The remaining one patient with hydatidiform mole did not reveal any organism in the contact smear of trophoblastic tumor tissue. No peripheral blood was examined.

In one patient with choriocarcinoma, the organism was found in the hemorrhagic uterine content sampled by uterine suction and 3-ml

peripheral blood specimen.

In 7 patients with toxemia of pregnancy (preeclampsia 5; eclampsia 2) the various forms of the organism were observed in 5. These forms were found in the 3-ml peripheral blood specimen of 2 cases of eclampsia, in the contact smears of placentas of 2 cases of preeclampsia and in the peripheral blood of another one case of preeclampsia. No organism was found in the peripheral blood sampling in the remaining 2 patients with preeclampsia.

Control. Single examination of 3-ml specimens of peripheral blood of 23 persons revealed the various worm-like forms in 12 (10 out of 16 men; 2 out of 7 women). In 11, no forms were found.

In additional 30 placentas with unknown history, the various forms of the organism were found in 24.

The organism. All forms of the organism, except the sperm-like structure, stained positively with the TBO-metanil yellow method. Giemsa procedure was not done.

The whole worm-like forms of the organism have varied morphologic features.

One form frequently observed is shown in Fig. 1. Internal segmentation is prominent. The head end is rounded, has a Y-shaped aperture with well defined, smooth, rounded borders, and contains a short channel, transverse band, and channels distal to the transverse band. Fig. 2 reveals an anteriorly located, smooth, elevated collar, surrounded by a local, diffusely scattered, deep purple-stained, fluffy, granular material.

Two parallel longitudinal tubular structures course through a large portion of the body from just below the transverse band near the head end, where they appear to be joined together, to just above the tail end, at which point they curve sharply toward the edge of the body and again unite. The tail end is slightly curved, narrow and rounded. The rounded tip is stained deep purple. The body covering consists of a thin cuticle that dips slightly inward between the segments.

Another whole body form observed is shown in Fig. 3. There is a suggestion of segmentation as indicated by the cuticle. Two parallel longitudinal channels course through most of the length of the body; they unite and terminate blindly near both ends. One end, which is taken to be the anterior end, is narrow and has a circular structure with darkly stained thin membrane at the tip. The tail end is lobulated. The tubular character of the longitudinal channels is apparent.

Occasionally, in some whole worm-like forms, a central longitudinal channel contains oval structures shown in Fig. 4. The oval structures bear some resemblance to eggs within the uterus.

An infrequently observed whole worm is shown in Fig. 5. The head end is rounded. The staining is too deep to permit study of their details. The body has extremely flat, thin segments and the edges are serrated.

It is very common to find whole worm-like forms that have gone degenerative changes.

The egg-like forms observed in the smear preparations tended to be arranged in large clusters or in small groups, or rarely as isolated cells. These shown vary in size and differ in development. Most are spherical in shape. The outer membrane of each is distinct and a nucleus and nucleolus are present. Fig. 6. C.

reveals an eccentric nucleus, two-layered outer nuclear membrane and polar cap stained purple.

Several larva-like forms are observed. The one shown in Fig. 7 has a bulbous end and the other narrower end with scalloped outer margins and a deeply-stained, oval body that projects outward at a sharp angle. Longitudinal channels are well demonstrated in Fig. 8.

Another larva-like form (Fig. 9) shows definite segmentation with the segments being of unequal size. Coursing through most of its length are faintly stained, parallel, longitudinal tubules similar in appearance to those we have observed in the longer worm-like forms. At one point near the end the tubular character is quite evident. The tip of the other end is rounded and stained deep purple.

References

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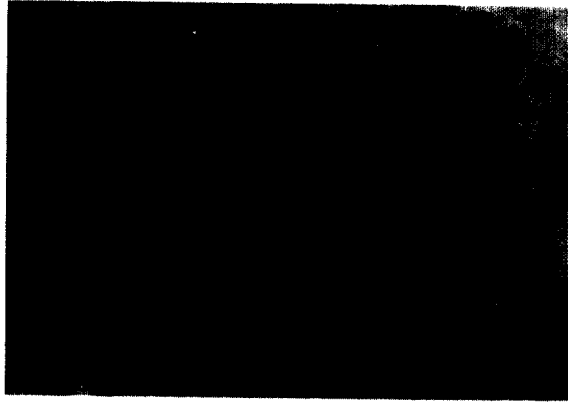
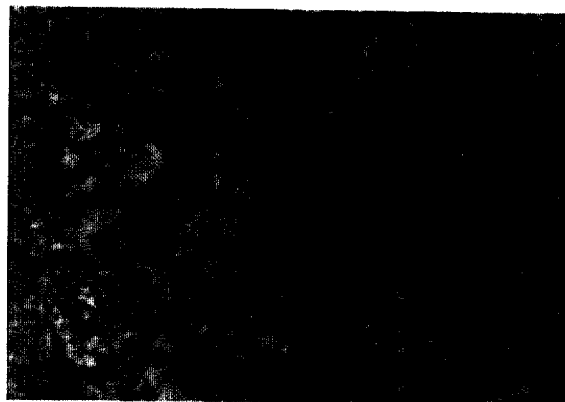


Fig.1. A, Photomicrograph of a whole worm-like form, obtained from a 3-ml sample of peripheral circulating blood in patient with hydatidiform mole ($\times 50$).



B, A higher-power view of the head end, showing the Y-shaped aperture, short channel, transverse band, and channels distal to the transverse band ($\times 200$).



C, The tail end is narrow and gently curved, and the rounded tip is stained purple. An opening to the exterior could not be identified ($\times 200$).



Fig. 2. A & B, Photomicrograph of another whole worm-like form, obtained from 3-ml sample of peripheral circulating blood in patient with severe eclampsia ($\times 100$). There is a pore circumscribed by a smooth, elevated collar and surrounded by a local, diffusely scattered, deep purple-stained, fluffy, granular material near the anterior end ($\times 400$).



Fig. 4. A, This whole worm-like form reveals several oval structures in the central longitudinal channel ($\times 100$). B, Within a central canal with inner segmentation are oval bodies, each with a small, deeply stained inner structure. Note the resemblance of oval bodies to the egg-like forms in Fig. 6, C ($\times 400$).



Fig. 3. This whole worm-like form has structural characteristics that differ from those of the ones shown in Fig. 1 & 2. This whole worm-like form shows red to red-purple inner granules. The longitudinal channels are similar to those in the form shown in Fig. 1 ($\times 100$).

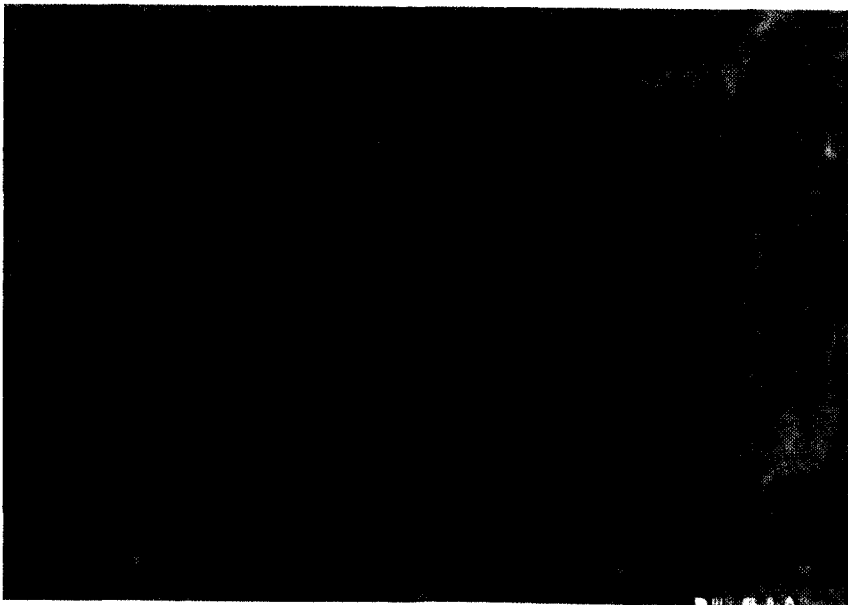


Fig. 5. This whole worm-like form differs from the ones shown in Figs. 1, 2 and 3. It has sharp, serrated borders and flat, thin segments. The anterior end is rounded and deep purple. At the tail end there is a sharply curved spike ($\times 100$).

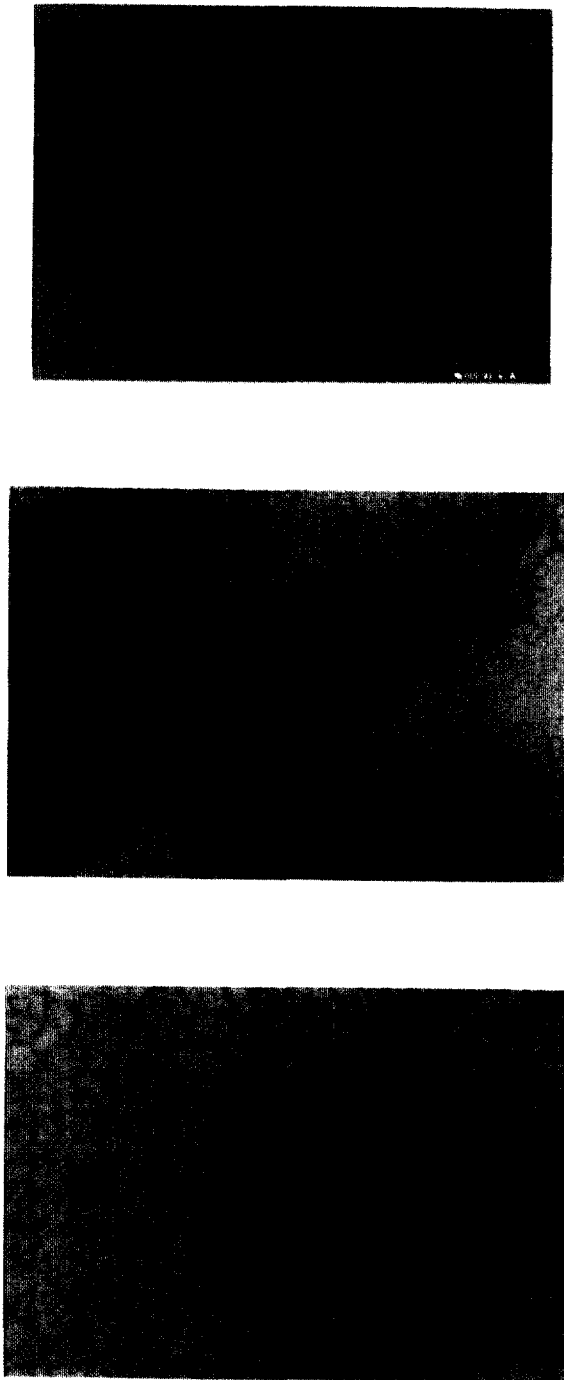


Fig. 6. A & B, Egg-like forms are frequently concentrated in large numbers in a local region ($\times 20$, $\times 100$); C, Details of the egg-like forms showing an eccentrically located nucleus and nucleolus within a double-layered outer membrane and a deeply stained polar cap ($\times 400$).

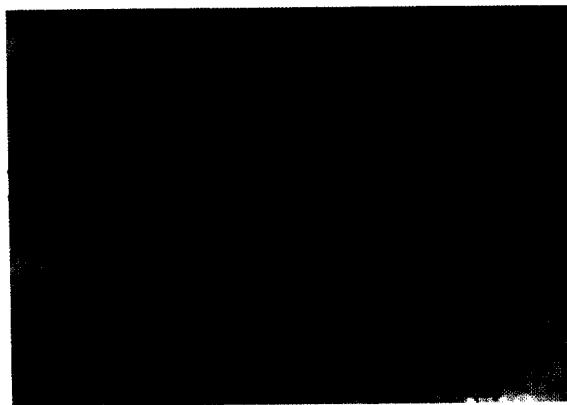


Fig. 7. A larva-like form showing in its wider portion with several unevenly stained structures. The narrower portion has scalloped borders ($\times 400$).

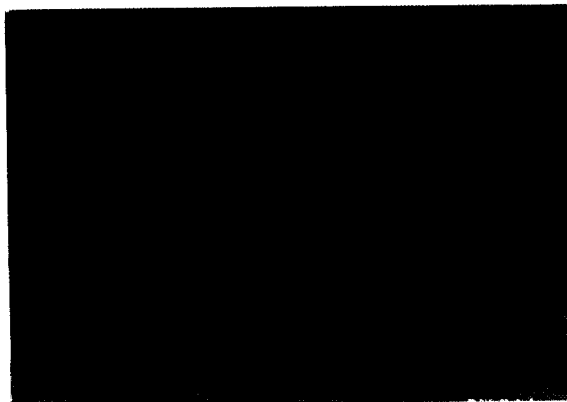


Fig. 8. Another larva-like form showing central longitudinal channels ($\times 400$).

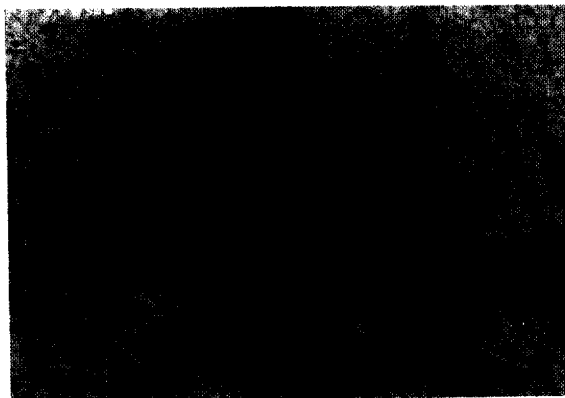


Fig. 9. Another larva-like form showing definite segments of unequal size. Two longitudinal channels are seen ($\times 100$).