Entomophthoromycosis in Maharaj Nakorn Chiang Mai Hospital

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Abstract

Objective : To review documented entomophthoromycosis patients at Maharaj Nakorn Chiang Mai Hospital from 1985 to 2001.

Material and Method : A retrospective review was performed at Maharaj Nakorn Chiang Mai Hospital from 1985 to 2001. Eight cases of entomophthoromycosis were found between 1988 and 1993, with five patients diagnosed as subcutaneous zygomycosis, 1 GI entomophthoromycosis and 2 rhinofacial zygomycosis.

Results : The subcutaneous zygomycosis group was composed of 5 female patients, aged 7- 77 years. They presented with a painless subcutaneous mass, which was solitary or multiple and most commonly found on the extremities. The duration of disease was between 3 months to 5 years. The cultures grew *Basidiobolus ranarum.* A case of GI entomophthoromycosis was seen in a 34 year old man, who presented with dyspepsia, multiple intraabodminal masses and peritonitis. Two cases of conidiobolomycosis (rhinofacial zygomycosis) were seen. These two patients were male, 26 and 39 years old, and they presented with unilateral nasal obstruction from a mass at the inferior turbinate. The cultures grew *Conidiobolus coronatus.*

Conclusion : Entomophthoromycosis in the northern part of Thailand is rare. The disease should be differentially diagnosed by a chronic painless tumor. The patients in this review responded very well to the recommended therapy.

Key word : Entomophthoromycosis, GI, Zygomycosis, Subcutaneous

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Zygomycosis (old term : phycomycosis) includes mucormycosis and entomophthoromycosis. Mucormycosis generally causes severe infections in individuals who are severely ill or immunocompromised, including diabetic ketoacidosis or immunosuppressed patients. The characteristic histopathology includes broad, thin-walled, no or few septa mycelium without an eosinophilic sheath, and the hyphae usually infiltrate the wall of blood vessels. Entomophthoromycosis includes basidiobolomycosis (subcutaneous zygomycosis) and conidiobolomycosis (rhinofacial zygomycosis). These diseases are usually seen in healthy people. The hyphae are broad, thin-walled, sparsely to regularly septate, branch at a right angle, and usually show an eosinophilic halo (Splendore-Hoeppli phenomenon) around the hyphae in the histopathology[1,2].

MATERIAL AND METHOD

A retrospective review was performed at Maharaj Nakorn Chiang Mai Hospital from 1985 to 2001. Eight cases of entomophthoromycosis were found between 1988 and 1993, with 5 patients diagnosed as subcutaneous zygomycosis, 1 gastrointestinal (GI) entomophthoromycosis and 2 rhinofacial zygomycosis.

RESULTS

The subcutaneous zygomycosis group composed of 5 female patients, aged 7-77 years. They presented with a painless subcutaneous mass, which was solitary or multiple and most commonly found on the extremities. The duration of disease was between 3 months - 5 years. (Table 1) (Fig. 1, 2). The histopathology showed a diffuse granulomatous inflammation infiltrated with lymphocytes, histiocytes, plasma cells and multinucleated giant cells with a marked preponderance of eosinophils in the dermis and subcutaneous tissue. Broad, thin-walled hyphae were also seen. The hyphae presented occasional septa, and branched at right angles. An eosinophilic sleeve (Splendore-Hoeppli phenomenon) was seen surrounding the hyphae and was PAS positive (Fig. 3). The wall of the hyphae was thin and took up very little hematoxylin, but it was stained red by the PAS method and black by the GMS method. The cultures grew *Basidiobolus ranarum (-haptosporus)* (Fig. 4).

A case of GI entomophthoromycosis was seen in 1993. He was a 34 year-old male, who presented with dyspepsia, multiple intraabodminal masses and peritonitis. Exploratomy laparotomy revealed multiple intraabdominal masses with perforation at the small bowel. A small bowel biopsy revealed granulomatous inflammation, multinucleated giant cells and broad hyphae surrounded by an eosinophilic sleeve in the wall of the small bowel (Fig. 5). The hyphae were broad, and branched at right angles with occasional septa. They were GMS and PAS positive.

Two cases of conidiobolomycosis (rhinofacial zygomycosis) were seen in 1992. The patients

Table 1. Summary of data of the patients with subcutaneous zygomycosis.

	Case 1 1988	Case 2 1988	Case 3 1990	Case 4 1991	Case 5 1993
Age (years)	25	15	7	77	56
Site	Leg (solitary)	*	trunk, chin, extremities	Right elbow (solitary)	Left axilla (solitary)
Duration	*	*	5 yr	3 Mo	1 yr

* No available data

Table 2. Summary of data of patients with rhinofacial zygomycosis.

	Case 1 1992	Case 2 1992
Age (years)	26	39
Symptom	Rt. nasal obstruction	Rt. Nasal obstruction
Duration (months)	2	3

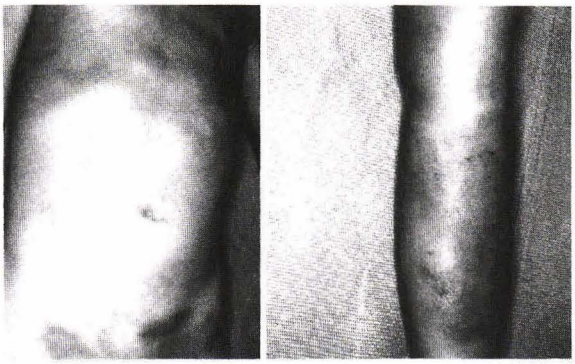

Fig. 1. **The figure shows a 7-year-old girl presenting with multiple subcutaneous nodules distributed on the chest, trunk, pubic region and extremity.**

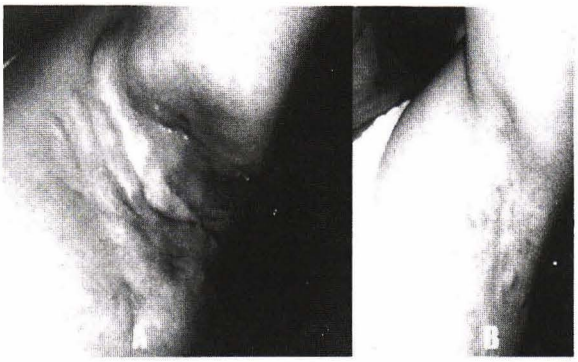

Fig. 2. **The figure shows a large painless mass on the left axilla of Case 5 A) before treatment, and B) after treatment with cotrimoxazole.**

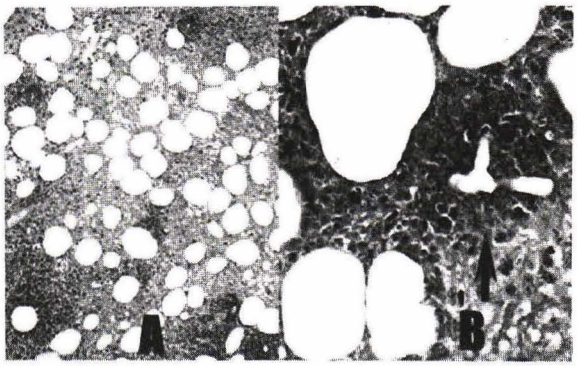

Fig. 3. **The histopathological features demonstrate A) granulomatous inflammation in the subcutaneous tissue (H&E, X100) and B) hyphae that is broad, thin-walled and branches at a right angle (arrow) with surrounding eosinophilic halo (Splendore-Hoeppli phenomenon) (H&E, X400).**

were 26 and 39 year old males. They presented with a unilateral nasal obstruction from a mass at the inferior turbinate. Partial inferior turbinectomy was performed. The histopathology was the same as in basidiobolomycosis cases, and the cultures grew *Conidiobolus coronatus* (Fig. 6).

All cases of subcutaneous zygomycosis, except case 5, were treated successfully with an oral saturated solution of potassium iodide at 20-25 mg/kg/d. Case 5 was treated successfully with oral cotrimoxazole. The patients with conidiobolomycosis were treated successfully with total excision of the tumor mass and ketoconazole at 400 mg/d for 70 days.

DISCUSSION

Basidiobolomycosis or subcutaneous zygomycosis is caused by *Basidiobolus ranarum* - a fungus found on decaying plants and in the gastrointestinal tracts of frogs, lizards and other amphibians. It causes infection in horses and other animals[1,2]. The first human case was reported in Indonesia in 1956[3]. About 250 human cases have been reported since. Most cases are from Uganda, Nigeria and Indonesia [1], and the disease has been occasionally found in Thailand[4-6]. The clinical presentation begins as a painless well-circumscribed subcutaneous nodule that gradually increases in size. The overlying skin is usually discolored or hyperpigmented, but does not ulcerate. The most common site in reported cases is at the extremities and trunk. Lymph nodes are generally uninvolved[1,2,7]. Infection of the gastrointestinal tract and lung have also been reported[8-11]. The authors of this review believe this to be the first case report of GI entomophthoromycosis in Thailand.

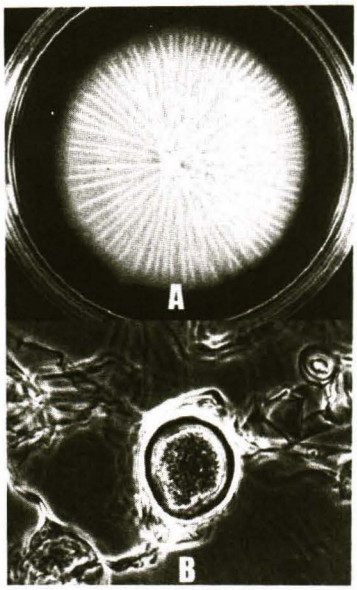

Fig. 4. A) the colony of *Basidiobolus ranarum* is glabrous with a radial fold, white-cream color, and becoming covered by a very fine hairy surface on the Sabouraud's dextrose agar, and B) typical round thick-walled zygospores with a beak-like structure.

Fig. 5. The histopathology shows A) granulomatous inflammation and eosinophilic material (arrow) in the wall of the small bowel (H&E, X20), and B) hyphae (arrow) surrounded by an eosinophilic sleeve (PAS, X400).

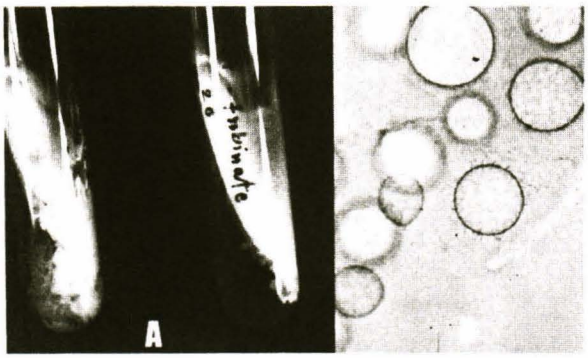

Fig. 6. A) the colony of *Conidiobolus coronatus* is tannish to light brown in color, and B) the conidium produce papillae and multiple short, hairlike appendages around the villose conidia.

Conidiobolus species are found in soil, decaying vegetation, insects and the GI tract of amphibians. It causes infection in horses and other animals[1]. The first human case was reported in 1965[12]. Over 150 human cases have been reported since. Most cases are found in Central and West Africa, particularly Nigeria, Cameroon and Congo. It largely affects young adult men[1]. The infection causes well-circumscribed subcutaneous masses that involve the nasal and paranasal tissue, and upper lip[1,13]. Swelling in the inferior turbinates is common[14-18]. To the best of these authors' knowledge, these are the first reported cases of conidiobolomycosis in Thailand.

The treatment of entomophthoramycosis includes potassium iodide, cotrimoxazole, amphotericin B, ketoconazole, itraconazole, fluconazole and hyperbaric oxygen[1,2,7,16-19]. The patients responded very well to the recommended treatment.

SUMMARY

Entomophthoromycosis in the northern part of Thailand is rare. The patients in this review included a girl and an elderly person, who were beyond working age. This supports the hypothesis that the infection is acquired through minor skin trauma or insect bites. The disease should be differentially diagnosed by a chronic painless tumor of the skin and subcutaneous tissue, intraabdominal mass and rhinofacial lesion. The diagnosis can be made by using direct smear, histopathology and culture. The patients responded to the standard treatment.

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ผู้ป่วยเอ็นโตมอฟโดโรมัยโคสิสในโรงพยาบาลมหาราชนครเชียงใหม่

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วัตถุประสงค์ : เพื่อศึกษาอุบัติการณ์และลักษณะอาการทางคลินิกของผู้ป่วย entomophthoromycosis ที่เข้ารับการรักษาที่โรงพยาบาลมหาราชนครเชียงใหม่ ตั้งแต่ปี พ.ศ. 2528 – 2544

วัสดุและวิธีการ : เป็นการศึกษาแบบย้อนหลังของผู้ป่วยที่ได้รับการวินิจฉัยโรคว่าเป็น enthomophthoromycosis พบผู้ป่วยทั้งหมดจำนวน 8 ราย โดย 5 รายให้การวินิจฉัยโรคเป็น subcutaneous zygomycosis, 1 รายเป็น GI entomophthoromycosis และ 2 รายเป็น rhinofacial zygomycosis

ผลการศึกษา : ผู้ป่วย subcutaneous zygomycosis 5 ราย ทุกรายเป็นเพศหญิง อายุระหว่าง 7–77 ปี ทุกรายมารับการรักษาก้อนใต้ผิวหนัง จำนวน 1 หรือหลายก้อน ส่วนใหญ่พบที่บริเวณแขนขา ผลเพาะเชื้อเป็น *Basidiobolus ranarum* ผู้ป่วย entomophthoromycosis ของทางเดินอาหารพบในผู้ป่วยชายอายุ 34 ปี มาด้วยอาการเยื่อบุช่องท้องอักเสบเนื่องจากมีการทะลุของก้อนที่บริเวณลำไส้เล็ก และผู้ป่วย rhinofacial zygomycosis 2 ราย มาด้วยอาการคัดจมูกเนื่องจากมีก้อนที่บริเวณ inferior turbinate ของโพรงจมูกด้านขวา ผลเพาะเชื้อเป็น *Conidiobolus coronatus*

สรุป : Entomophthoromycosis เป็นโรคที่พบได้น้อยในภาคเหนือของประเทศไทย ในกรณีที่ผู้ป่วยมาด้วยก้อน–เนื้องอกบริเวณแขนขา ใบหน้า หรือในช่องท้องจำเป็นต้องนึกถึงโรคนี้ในการวินิจฉัยแยกโรคด้วย ผู้ป่วยทุกรายตอบสนองดีต่อการรักษาด้วยยา

คำสำคัญ : เอ็นโตมอฟโดโรมัยโคสิส, ระบบทางเดินอาหาร, ซัยโกมัยโคสิส, ใต้ผิวหนัง

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