

Ringworm on Sapi Bali at Baumata Timur Village

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INTRODUCTION

Skin is the largest organ in the body, represent 12-14% of the body. Viruses, fungi, algae and parasites are the common cause of skin disorders. The conditions that affect skin are characterized by alopecia, pruritic, dermatitis, and the presence of nodules, crusty lesions or scabs. The main cause of dermatosis or inflammation of the skin in human and many of animal species is dermatophytes, and the infection is called dermatophytosis. The distribution of ringworm is worldwide but the incidence reported frequently in tropical and subtropical countries (Pal, 2017). Ringworm is a keratinophilic fungal disease, highly contagious to humans and caused significant economic consequence to the farmers (Karabulut and Canpolat, 2016). Generally speaking, there are three groups of dermatophytes based on their habitat and host preferences (Akbarmehr, 2011).

CASE REPORT

Signalment

Species: cattle; age: 1 year old, 8 months; Sex: female; weight: 78.1 kg (chest girth² x body length/11050); hair colour: reddish-brown, end of tail black; white socks and white area of hindquarters.

Anamnesis

The cattle has been treated with anthelmintic and vaccinated for SE (Septicaemia epizootica). The cattle was raised in a semi-intensive area with total population of 6 cattle and were fed with *Leucaena leucocephala* leaves. The skin lesions were first identified and recorded on early February. The lesions appeared initially on cervical area before it spread to all surface of the body.

Clinical signs

There were nodules, scabs and alopecia on head and neck areas, thorax, abdominal, fore legs, hind legs and pelvic area.



Picture 1. Multifocal nodules, scabs and alopecia on head (A), cervical area (B), fore legs (C), thorax, abdominal and pelvic areas (D).

Table 1. Location and number of lesions

No	Location	Numbers
1.	Head	15
2.	Cervical	21
3.	Thorax	10
4.	Abdominal	26
5.	Fore legs	34
6.	Hind legs	6
7.	Pelvic	6

Laboratory examination

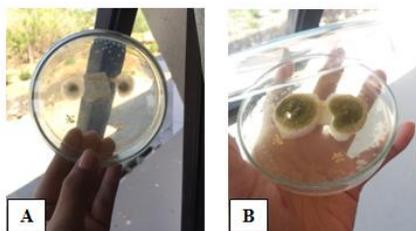
The laboratory examination conducted on this study was skin scraping. There are two procedures in this examination, i.e:

- Skin scraping samples are inserted into 10% KOH and viewed under a microscope. The results found were fungi with hyphae and septa.

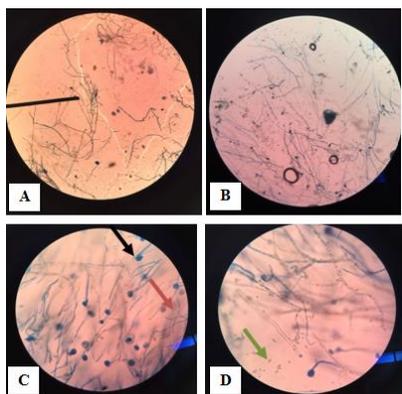


Picture 2. Fungus with hyphae and its septa

- A scraping of the skin is inoculated directly onto Sabouraud Dextrose Agar (SDA). The growth of the fungus were observed macroscopically. The growth samples were taken with sterile needle and were stained with lactophenol cotton blue. The sample were then observed under a microscope. The macroscopic findings on day one was fungus with white edge (outer), brownish-yellow center and the core is white. On the second day, the fungus observed with white edge, brownish-yellow center and the core was not clear. Microscopically, the hyphae with septa, sporangium and sporangiophores were observed under microscope.



Picture 3. Macroscopic findings of the fungus on the first (A) and second (B) day



Picture 4. Microscopic findings of the fungus stained with Lactophenol cotton blue on the first day (A), second day 10x (B) and 40x magnificent (C, D). The hyphae and septa (red arrow), sporangium (black arrow), and sporangiospore (green arrow).

Diagnosis and prognosis

The case was diagnosed as ringworm with faustal prognosis. The estimated therapy of the case would be 5-6 months.

Treatment

The therapy of the case as follows: the cattle were bathed with water mixed with detergent, topical application of povidone iodine solution directly on the skin lesions, administration of griseofulvin and vitamin AD-plex, orally.

DISCUSSION

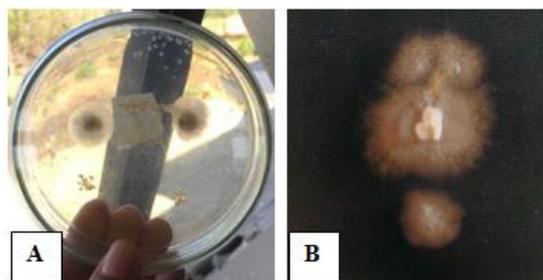
A cattle in East Baumata village was found

with skin lesions as nodules, crusts, and alopecia specific on head and neck areas, thorax, abdomen, fore legs, hind legs and pelvic area. The lesions were about 2cm-15cm. On investigation, the clinical manifestations were initially observed by the owners about 4 months prior to the current finding. The observed clinical signs are primary changes of ringworm on cattle. This finding was supported by Subronto (2008) and Manual Penyakit Hewan Mamalia (2014) as fungus has incubation period about 2-4 and cause alopecia. Within 2-3 months, the lesions became thick, round, and protrude within a clear whitish-grey edges. The lesions then progress to peripheral areas and reach 5-10 cm in diameter. The lesions may spread widely to the surface of the body, especially on young cattle.

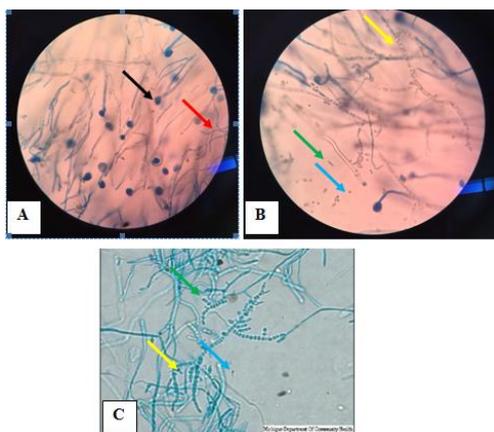
On interview, farmers mentioned that the first skin lesions was observed on February. This result supported by Schmit (1981) on his publication stated that ringworm prevalence frequently reported on tropical countries or even countries experience winter season. On the underlined condition, cattle are kept on the cage and rarely exposed to sunlight. thus, they are easily have direct contact on each other.

Previous publication by Ahmad (2005) stated that ringworm diagnosis is made on through skin scrapping examination; examination of nail or hair particles using wood lamps; direct microscopic examination with KOH 10% solution, specific staining and inoculation of the samples on specific media. In this study, skin scrapping from affected cattle were collected and inoculated on SDA media.

The results of the direct examination found fungi with hyphae and septa. The macroscopic findings on SDA media were fungi growing with white (outer) edges, brownish-yellow center and white core. On second day, the fungus were observed with white edges, brownish-yellow center, with unclear core. Microscopically, the hyphae with septa, spore sacs (sporangium) and spores (sporangiospores) were observed on the media. The results of the examination led to the appearance of the fungus *Trichophyton verrucosum*. This results is in line with Bodin (1902) reported the macroscopic features of *Trichophyton* as follows: the upper colonies were gray, white, yellow, while the lower colonies were brownish-yellow. The microscopic characteristics of *Trichophyton verrucosum* were the presence of hyphae that are insulated and consists of three forms of spores, namely microconidia, macroconidia and chlamydospora. Microconidia is round, oval and pear-shaped; macroconidia is long, smooth and multicellular; while chlamydospora is very abundant in its vegetative form.



Picture 5. Macroscopic features of *Trichophyton verrucosum*



Picture 6. Penampilan mikroskopik *Trichophyton verrucosum* yaitu hifa bersepta (panah merah), sporangium (panah hitam), mikroconidia (panah biru), makroconidia (panah hijau) dan chlamydospora (panah kuning) (Sumber gambar: A dan B. dokumentasi pribadi dan C. Arduin and Palma).

The case prognosis was fausta. However, the treatment period lasted in 5-6 months since the fungus already spread widely. The recommended treatment were crusts clearance (topical), administration of griseofulvin (oral) and vitamin ADE. Crusts cleansing is done by bathing the cow using mixture of water and detergent then brushed on the scab area, following with the application of povidone iodine solution. Detergents and povidone iodine served as antiseptics. Griseofulvin were administered orally once a day within dose range from 7.5 to 10 mg/kg, while the ADE-plex was administered 2 ml intramuscularly.

CONCLUSION

A case of cattle infected by *Trichophyton verrucosum* (Ringworm) was identified in East Baumata village. The therapy was successfully cleared the lesions from the affected cattle as indicated by the re-growth of hair in affected areas.

REFERENCES

- [1] Ahmad RZ. 2005. Permasalahan dan Penanggulangan Ring Worm pada Hewan. Lokakarya Nasional Penyakit Zoonosis. Bogor: Balai Penelitian Veteriner.
- [2] Akbarmehr J. 2011. The prevalence of cattle

ringworm in native dairy farms of Sarab city (East Azarbayjan province), Iran. *African Journal of Microbiology Research*. 5(11): 1268-1271.

- [3] Arduin S, Palma B. Mycology Review: Identification of Common Dermatophytes. Mycologi unit, Bureau of laboratories, Michigan Departement of Community Health.
- [4] Bodin. 1902. Atlas Dermatophytes (*Trichophyton verrucosum*).
- [5] Karabulut E, Canpolat I. 2016. The Treatment of Ringworm with Silver Nitrate Pencil in Cattle: Only One Application. Turkey: IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS).
- [6] Manual Penyakit Hewan Mamalia, 2014. Kementrian Pertanian. Direktorat Jenderal Peternakan Kesehatan Hewan.
- [7] Pal M. 2017. Dermatophytosis in an Adult Cattle due to *Trichophyton verrucosum*. India. Research Article: ISSN: 2513-9304.
- [8] Schmitt JA. 1981. *Disease of Cattle in The Tropics, Economic and Zoonotic Relevance*, Chapter 37, Mycotic Diseases, pp. 499-503.
- [9] Subronto. 2008. Ilmu Penyakit Ternak I-b (Mamalia) Penyakit Kulit (Integumentum) Penyakit Bakterial, Viral, Klamidial, dan Prion. Yogyakarta: Gadjah Mada University Press