

Semua laporan kemajuan dan laporan akhir yang dikemukakan kepada Bahagian Penyelidikan dan Pembangunan perlu terlebih dahulu disampaikan untuk penelitiaan dan perakuan Jawatankuasa Penyelidikan di pusat pengajian

LAPORAN AKHIR PROJEK PENYELIDIKAN R & D JANGKA PENDEK

A. MAKLUMAT AM

Tajuk Projek: Cryptosporidiosis In Immunocompromised
..... Children.
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Tajuk Program: IRPA Short Term Grant
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Tarikh Mula: April 1996
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Nama Penyelidik Utama: Dr.B.S.Menon 640917-71-5020
(berserta No. K/P)

Nama Penyelidik Lain: Dr.Balbir Singh
(berserta No. K/P)
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.....
.....

B. PENCAPAIAN PROJEK:

(Sila tandakan / pada kotak yang bersesuaian dan terangkan secara ringkas di dalam ruang di bawah ini. Sekiranya perlu, sila gunakan kertas yang berasingan).



Penemuan asli/peningkatan pengetahuan

During the period of study, there were 128 episodes of
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fever in 50 children with cancer. Two hundred and thirty-six
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stool specimens were collected. Forty-two per cent of
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children had stool parasites. Cryptosporidium parvum was
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found in one child-2% of children or 0.8% of febrile
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episodes. The child did not have diarrhoea but did have
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bronchopneumonia.
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Rekaan atau perkembangan produk baru,
(Sila beri penjelasan/makluman agar mudah dikomputerkan).

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- (2)
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- (3)
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Mengembangkan proses atau teknik baru,
(Sila beri penjelasan/makluman agar mudah dikomputerkan).

- (1)
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- (2)
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- (3)
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Memperbaiki/meningkatkan produk/proses/teknik yang sedia ada.
(Sila beri penjelasan/makluman agar mudah dikomputerkan).

- (1)
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- (2)
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- (3)
-

C. PEMINDAHAN TEKNOLOGI

Berjaya memindahkan teknologi.

Nama Klien: (1)
(Nyatakan nama penerima pemindahan teknologi ini dan sama ada daripada pihak swasta ataupun sektor awam) (2)
(3)

Berpotensi untuk pemindahan teknologi.
(Nyatakan jenis klien yang mungkin berminat).

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D. KOMERSIALISASI

Berjaya dikomersialkan.

Nama Klien: (1)
(2)
(3)

Berpotensi untuk dikomersialkan.
(Nyatakan jenis klien yang mungkin berminat).

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E. PERKHIDMATAN PERUNDINGAN BERBANGKIT DARIPADA PROJEK (*Klien dan jenis perundingan*)

- (1)
- (2)
- (3)
- (4)

F. PATEN/SIJIL INOVASI UTILITI (*Nyatakan nombor dan tarikh pendaftaran paten. Sekiranya paten/sijil inovasi utiliti telah dipohon tetapi masih belum didaftarkan, sila berikan nombor dan tarikh fail paten*).

- (1)
- (2)
- (3)

G. PENERBITAN HASIL DARIPADA PROJEK

(i) LAPORAN/KERTAS PERSIDANGAN ATAU SEMINAR

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- (2)
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- (5)
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(ii) **PENERBITAN SAINTIFIK**

(1) The paper has been submitted to the Journal Of Tropical Paediatrics.
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H. HUBUNGAN DENGAN PENYELIDIK LAIN
(Sama ada dengan insitituti tempatan ataupun di luar negara)

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(4)
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I. SUMBANGAN KEWANGAN DARI PIHAK LUAR
(Nyatakan nama agensi dan nilai atau peralatan yang telah diberi).

- (1)
- (2)
- (3)

J. PELAJAR IJAZAH LANJUTAN
(Nyatakan jumlah yang telah dilatih di dalam bidang berkaitan dan sama ada di peringkat sarjana atau Ph.D).

Nama Pelajar

Sarjana

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Ph.D

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K. MAKLUMAT LAIN YANG BERKAITAN

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31/12/97
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Tarikh

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Tandatangan
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HOSPITAL UNIVERSITI SAINS MALAYSIA
16150 KUBANG KUBU, NEGERI SEMPATAN.

Intestinal Parasites In Malaysian Children With Cancer

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SUMMARY

In this prospective study, we examined stool specimens from children with cancer on chemotherapy who were admitted for fever to the Universiti Sains Malaysia Hospital in Kota Baru, Kelantan. Stool specimens were examined for ova and cysts of parasites. Over a period of 15 months, there were 129 febrile episodes in 50 children with cancer and 237 stool specimens were examined. Sixty-six per cent of febrile episodes were associated with neutropenia and 9% were associated with diarrhoea. Stool parasites were found in 42% of children. The most common were helminths, followed by protozoa. Trichuris trichuria was the most common parasite (24%), followed by Ascaris lumbricoides (22%). Hookworm was found in 2%. Giardia lamblia was found in 6% of children, Blastocystis hominis in 4% and Cryptosporidium parvum in 2%.

INTRODUCTION

Enteric parasitic diseases are prevalent in Malaysia, particularly in disadvantaged communities.¹ Kelantan is a state in the North-East of peninsular Malaysia, with a largely rural population. A study in 1992 showed a high prevalence of Cryptosporidium parvum (11.4%) in children with diarrhoea from this state.² This organism has been reported as a cause of life-threatening diarrhoea in children with cancer.³ The aim of this study was to determine the prevalence of Cryptosporidium parvum as well as other stool parasites in paediatric oncology patients.

PATIENTS AND METHODS

This was a prospective study over a 15 month period from August 1996 till October 1997. Three stool specimens were collected on consecutive days from children with cancer on chemotherapy who were admitted for fever to the Hospital Universiti Sains Malaysia in Kota Baru. Fever was defined as a temperature of 38⁰ C on two occasions 4 hours apart or > 38⁰ C on one occasion. A questionnaire was completed for each patient documenting clinical information such as diarrhoea, animal contact and neutropenia. Diarrhoea was defined as an alteration in bowel habit and the passage of loose or watery stools. Neutropenia was defined as a granulocyte count of less than or equal to 1.0 x 10⁹ / l.

Stool samples were examined for ova and cysts of parasites by direct microscopy. The modified Ziehl-Neelsen stain was used to examine for Cryptosporidium oocysts.

RESULTS

During the study period, there were 129 episodes of fever in 50 children with cancer. Two hundred and thirty-seven stool samples were collected. The age range of patients was from 9 months -11 years, with an average of 5 years. There were 31 males and 19 females. Thirty-two children had leukaemia and 18 had solid tumours.

Each child had an average of 2.5 episodes of fever. Eighty-four episodes were associated with neutropenia (66%). Twenty-five children (50%) had a history of exposure to animals either livestock or domestic.

Twenty-one children had positive stool parasites (42%) -Table 1. Diarrhoea occurred in twelve children (9% of febrile episodes). In all cases the duration was less than one week. Four of the twelve had positive stool parasites. The organisms were Giardia lamblia in two cases, Blastocystis hominis and Ascaris lumbricoides.

CRYPTOSPORIDIUM PARVUM

One child had a positive stool specimen for C.parvum. This was a 2 year old girl with Down syndrome and bilateral retinoblastoma. She was not neutropenic at the time and did not have loose stools. However she did have bronchopneumonia. Three months earlier she had diarrhoea lasting one week but stool samples were negative for C.parvum. Four further stool samples 1 and 3 months following the positive sample were also negative. There was no history of animal contact.

GIARDIA LAMBLIA

Three children had positive stool samples for Giardia lamblia - two had symptoms of diarrhoea. One child had profuse diarrhoea (20 times/day) and abdominal pain. She was neutropenic at the time and had numerous trophozoites and cysts in her stool. She was treated with metronidazole as well as broad spectrum antibiotics. Despite this, she died, most probably due to a multi-resistant bacterial septicaemia.

BLASTOCYSTIS HOMINIS

Two children were positive for Blastocystis hominis, one of whom had diarrhoea. This child also had B.hominis in his stool two weeks prior to the diarrhoea when he was febrile but had no loose stools.

HELMINTHIASIS

Sixteen children (32%) had helminthiasis and 7 children (14%) had more than one helminth. Twelve children were positive for Trichuris trichuria and 11 for Ascaris lumbricoides. Only one child had hookworm ova-this child had a mixed infection with Giardia lamblia as well as Ascaris lumbricoides.

DISCUSSION

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Parasites are reported to be rare pathogens (1% of infectious episodes) in neutropenic patients in developed countries⁴. The prevalence in developing countries is not known. Our study showed that 42% of paediatric oncology patients were positive for stool parasites. Our numbers however were too small to show any significant association with neutropenia. The majority of children infected with helminths were asymptomatic; only one child had hookworm infection which might have exacerbated anaemia.

C.parvum was found in only 2% of children with cancer despite a history of animal exposure in 50%. C.parvum has been transmitted from infected domestic pets⁵ as well as cattle⁶. The index case had bronchopneumonia but no diarrhoea. C.parvum is known to cause respiratory disease⁷. However, in this case, we can not be certain that the protozoan was the cause as bronchial washings were not done. Only one of the 10 stool samples from this patient was positive for C.parvum. Multiple stool samples are necessary due to intermittent oocyst excretion.

In Mexico, C.parvum was found only in the diarrhoeal stools of adult cancer patients⁸. There were few diarrhoeal episodes in our study which may explain the low prevalence of the organism. However, a large study in India in 560 cancer patients with diarrhoea showed a similar prevalence to ours of 1.3%⁹.

Two children had significant symptoms due to giardiasis. Severe giardiasis has been reported previously in a child on chemotherapy¹⁰. The death in our case was attributed to bacterial infection rather than giardiasis. There is controversy as to whether Blastocystis hominis is a pathogen in humans¹¹. Both children with this organism had negative stool samples subsequently without any specific treatment.

In conclusion, we found a high prevalence of enteric parasites in paediatric oncology patients in Kelantan, Malaysia. However, this was mainly due to helminthiasis rather than protozoal infections and the majority of patients were asymptomatic.

ACKNOWLEDGEMENTS

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**TABLE SHOWING THE PREVALENCE OF STOOL
PARASITES IN CHILDREN WITH CANCER**

PARASITE	PREVALENCE
1. <u>Trichuris trichuria</u>	24 %
2. <u>Ascaris lumbricoides</u>	22 %
3. <u>Giardia Lamblia</u>	6 %
4. <u>Blastocystis hominis</u>	4 %
5. Hookworm	2 %
6. <u>Cryptosporidium parvum</u>	2 %