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Research Article

Hepatic Hydatid Disease in 21st Century New Zealand: Is there Still a Problem?

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- Hepatectomy
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Abstract

Background: This investigation reviews the contemporary characteristics of hepatic hydatid disease in New Zealand presenting for treatment.

Methods: A prospectively maintained clinical database containing demographic, patient and treatment data of patients presenting with hepatic hydatid disease between 1998 and 2015 was reviewed.

Results: Twelve patients (six male) were identified with a median age at presentation of 61 yr (range 34-78 yrs). Eight patients were New Zealand European, three Maori and one Indian migrant. Abdominal pain (7 patients) and malaise (3 patients) were the most common presenting symptoms. Hydatid serology was positive in all patients with the diagnosis confirmed by typical appearance on cross -sectional imaging. Ten patients had a past history of hydatid disease, 3 patients presented with biliary fistulae and 4 patients had extensive intra-abdominal disease. All patients were managed with pre and post-operative anthelmintic medication prior to surgery (two lobectomies and 10 treated with scolicidal instillation and cyst excision). There were no in-hospital deaths following treatment and 11 patients remain alive and well off treatment with a median follow up of 67 months (range 12-210 months).

Conclusion: Hepatic hydatid disease is now rare and largely comprises patients with recurrent disease rather than new presentations.

INTRODUCTION

Hydatid disease due to infection with *Echinococcus granulosis* was first described in New Zealand in 1881 by Thomas [1] who reviewed 54 admissions to New Zealand's public hospitals. However the disease was made notifiable in 1873 [2] implying that it was recognised prior to Thomas's report. In 1976 Burridge *et al* [3] summarised the state of hydatid disease between 1878 and 1972 highlighting a decline in the incidence and mortality after 1955 when community based initiatives driven by the a national agricultural organization eliminated the feeding of uncooked sheep offal to dogs and later introduced mandatory canine dosing of arecholine. These local initiatives were reinforced by the passing of the Hydatids Act (1959) and the formation of the National Hydatids Council to implement control measures on a national scale [4]. By 1972 the prevalence rate of hydatid disease had had fallen from 28.7/1000,000 in 1878 to unrecordable levels while the annual incidence had fallen from 68.2/1000,000 in 1935, when the first reliable figures became available, to 11 .9/1000,000 in 1972. These investigators also highlighted that, even in 1972, New Zealand Maori had five times the incidence of non-Maori, and that between 1961 and 1970 the incidence rate of hepatic hydatid disease fell only in children, consistent with an effective primary prevention program.

Since 1972 the overall incidence of hydatids has continued to decline in New Zealand with the last recorded case in a slaughtered animal in 1996 and the National Hydatids Council was disbanded in 1991. Sporadic clinical reports from the 1980s and 1990s highlight a decreasing surgical workload made up of patients with primarily recurrent disease [5-7] and an increasing role for anthelmintic therapy as a primary treatment with surgical resection reserved for those patients with surgically curable disease, those presenting acutely with complications and those with manageable levels of comorbidity [5,6]. New Zealand was declared provisionally hydatids free in 2002 [8] however hydatids remains a notifiable disease with between one and seven cases reported annually to the New Zealand Ministry of Health over the last 10 years.[5]Importantly it remains part of the syllabus for specialist training in surgery and internal medicine, continues to be included in the differential for all patients presenting with cystic liver lesions, and it has been suggested that it remains a significant health problem in Australasia [9]. There have been no investigations reporting the status of hydatid

disease in New Zealand in the 21st century although Burridge *et al* [3] suggest that by now new cases should be rare and most, if not all, presentations will comprise patients with long-standing infections.

This investigation was undertaken to define the number and characteristics of hepatic hydatid cases requiring surgical intervention in the last 16 years and to determine whether it remains a significant part of hepatobiliary practice in New Zealand.

METHODS

All patients that had undergone surgical treatment for hepatic hydatid disease at Auckland City Hospital or North Shore Hospital between October 1998 and December 2015 were identified from a prospectively maintained clinical database. Patients were identified by their National Health Index number and the relevant demographic, radiological, serological, operative and pathological data collected electronically from the hospitals' database and review of paper records with approval from Awhina Research and Knowledge, Waitemata District Health Board and the Northern Regional Ethics Committee.

RESULTS

Demographics

Twelve patients (six male) were identified from the clinical database with a median age at presentation of 61 yr (range 34-78 yrs). Eight patients were New Zealand European, three New Zealand Maori and one Indian migrant, while five patients lived in the Auckland/Northland area, four in Canterbury, two in Otago and one in the Manawatu.

Presentation

Details of presentation and past history of hydatid treatment are presented in table 1. In one patient a calcified hydatid cyst was an incidental finding on plain abdominal film taken for mild blunt trauma. One patient presented with fevers and rigors due to lobar pneumonia and was found to have a cystobronchial fistula. Ten patients had a past history of hydatid disease, two having been treated for pulmonary disease 20-40 years prior to presentation and eight treated for intra-abdominal disease between 10 and 30 years prior to presentation. Two patients presented with newly diagnosed disease, one a 58-year-old New Zealand farmer and a 34 year old immigrant from India. Of the 12 patients, four had extra hepatic disease present in the spleen, peritoneum, pleura and pelvis at presentation with hepatic disease. The hepatic disease was present in the right lobe of the liver in three patients, bilobar in eight and in the left lobe in one patient.

Management

Details of pre-operative, intra-operative and post-operative management are presented in table 2. Two of the 11 patients managed with pre-operative albendazole developed pancytopenia and were changed to praziquatal after 12 and 16 days of therapy respectively. Intra-operatively betadine and silver nitrate were used as scolicidal agents in the first two patients and thereafter hypertonic saline was used in a further 10 patients.

Table 1: Summary of presenting symptoms, abdominal examination findings and pre

Presentation	
Abdominal pain	7
Malaise	3
Fever/rigors	1
Incidental	1
Examination Findings	
Abdominal mass	7
Jaundice	3
Normal abdominal examination	2
Investigations	
Hydatid haemagluttination positive	12/12
Hydatid complement fixation positive	2/2
CT Scan	12/12
MRI	2/2
ERCP	3/3

Table 2: Summary of pre, intra and post-operative management.

Pre-operative Treatment	Number Patients
Albendazole	11 (2)
Praziquantal	1 (3)
Post-operative Treatment	
Albendazole	9
Praziquantal	3
Intra-operative Treatment	
Hepatic lobectomy	2
Hydatid cystectomy	10
Additional Procedures	
Pulmonary resection	1
Splenectomy	1
Common bile duct exploration	3

Outcome

There were no in hospital deaths following treatment. One patient died 4 years post-operation of cardiac failure. The median hospital post-operative stay was 8 days (range 5-23 days). Three patients developed a significant post-operative complication (peri-operative myocardial infarction, symptomatic intra-abdominal collection requiring percutaneous drainage in two patients). Three patients with known biliary fistulae treated with pre-operative ERCP and operative closure of the fistula had prolonged bile drainage of bile into a surgical drain and these drains were removed in outpatient clinic between 18 and 36 days post-operation. All surviving 11 patients have no signs of active hydatid disease and remain well off treatment with a median follow up of 67 months (range 12-210 months).

DISCUSSION

Hydatid disease has a long history in New Zealand dating from the 1860s and was a major health issue for New Zealanders and a significant part of the clinical workload for New Zealand surgeons for most of the 20th century. Between 1951 and 1970 New Zealand had an average annual incidence of new hydatid cases of 68 of which 32 were hepatic.[3]This investigation has shown that 12 patients presented with hepatic hydatids between1998-2015. Over the same time period in the Northern region over 1000 hepatic resections have been performed for

indications including trauma, cancer and pre-malignant lesions as well as inflammatory conditions such as hepatolithiasis. Hydatids is now only rarely seen and treated by surgeons. Current New Zealand Ministry of Health data show that there are between one and seven notifications annually [10] and, based on this report most represent chronic disease rather than presentations of newly acquired disease since 10 of our patients had previously been treated for hydatids. Of these eight had previously had abdominal disease and their representation may signify incompletely treated disease or the results of spillage at their initially procedure. However two of our patients did present with newly diagnosed disease. Importantly one was a migrant from India and others have documented the phenomenon of new diagnoses in migrants from endemic areas to countries where hydatids is rare [11].

The demographic profile of the current series is consistent with that of Burridge *et al* [3] in that Maori made up one third of our patients yet comprise only 15% of our population. Burridge *et al* [3] showed that hydatids had a higher incidence in Maori and also a higher prevalence particularly in Maori from the East Coast of New Zealand. A recent publication from Waikato Hospital describes 14 patients with hydatid disease treated over a 10 year period from this district [12]. While historically patients with hydatid disease were managed at local hospitals [7] the conditions increasing rarity and the often comorbid status of the patients means that most are now treated in tertiary upper gastrointestinal units. We believe that, taken together, the report of Reid et al [12] and the current report are an accurate reflection of the current status of hydatid disease in New Zealand with a small number of operative procedures performed annually in tertiary institutions with the remainder of patients treated primarily with anthelmintic agents [5,6].

In this series presentation with hydatid disease tended to be non-specific with abdominal pain and malaise most common presenting symptoms. Examination findings were also non-specific but serological tests and appearance on cross sectional imaging allowed definitive diagnosis. Consistent with long standing disease the majority of our patients presented with complex liver disease with biliary fistulae or extra hepatic disease and required complex surgical resections. However two patients with localised disease required hepatic lobectomy and most were managed with conservative hydatid surgery treating the disease with an anthelmintic preoperatively, intraoperative treatment of cysts with a scolicidal agent followed by cyst excision [13]. Post-surgical therapy with anthelmintics was also employed in all patients. With this surgical policy only 3 patients developed significant post-operative complications and all patients had their disease eradicated. No patients were managed with percutaneous aspiration because of concerns over precipitating anaphylaxis [14].

Consequently, hydatid disease is a now a rare part of hepatobiliary surgery in New Zealand but there remains a reservoir of patients in the community with disease dating from last century prior to the introduction of widespread control measures and immigration will also contribute new presentations of the disease. The ability to diagnose, image and treat the disease has improved greatly and the development of effective anthelmintic therapies has ensured that primary medical therapy is possible and that all surgical patients can receive perioperative treatment.

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