THE MEDICAL EXPERIENCE OF THE MALTA MARATHON 1988

ADRIAN M. AGIUS M.D.

Department of Surgery St Luke's Hospital, Malta

CHARLES J. GRIXTI MD FRCS

Department of Orthopaedic Surgery St Luke's Hospital, Malta

JOSEPH M. CACCIOTTOLO MD MRCP

Department of Medicine St Luke's Hospital, Malta

Abstract

Marathon running is known to be associated with orthopaedic and medical injury. The aim of this study was to observe, report and analyse injuries occurring during the Malta Marathon, held on 21 February, 1988.

Observations showed that the commonest specific problems were muscle cramps and, upon completion of the event, hypotension. The significance of these, and other injuries in the context of long-distance runs is discussed.

Introduction

A broad spectrum of orthopaedic and medical injury is known to be associated with marathon and long distance running. In many events, musculoskeletal complaints such as cramps, tendonitis, sprains, blisters and fatigue fractures are very common (1, 2). Thermoregulatory disorders occasionally happen in such physically demanding events and the consequences of heat injury include disseminated intravascular clotting and acute tubular necrosis (3). Hypothermia may develop even on relatively warm days in the course of a long run (4). Rhabdomyolysis may also be another consequence of marathon running and may at times have a fatal outcome (5). Such complications have been observed not only in amateurs but also in trained professional athletes. Transient abnormalities which disappear after adequate rest are also known to occur and include haematuria and proteinuria (6).

This study is the first of its kind in Malta and focuses on the injuries occurring during the course of an international marathon held on 21 February 1988. It was organised in the light of a previous experience with thermoregulatory disorders exhibited by some of the participants during a locally organised long run (7).

The Marathon started at 9.00 a.m. and 310 participants were expected to complete the 42 km. course in approximately $3^1/_2$ hours. Runners however had the option of participating in a half marathon run. 268 (86%) of runners were males and 42 (14%) were females. The maximum ambient shade temperature for that day was 17°C, and the relative humidity was 48%. Drinking stations were sited at intervals of 5 km. Fig. 1.

Methodology

In order to study the injuries occurring throughout the marathon, a team of observing medical officers was briefed beforehand about the wide range of problems that were likely to be encountered. A standard questionnaire was prepared, such that allowed a quick comprehensive assessment of casualties. Participants were to be identified by their competition number. The last station passed, time, type of injury and cause together with vital parameters and initial management, where relevant, were to be recorded.

Three medical officers supervised the race throughout in separate ambulances, while another six were stationed at the finish line. At this point, all participating runners were directed into a large enclosed area where medical facilities were available. Back-up facilities were available at the local general hospital, which was informed beforehand of the event.

Results

The number of contacts made by athletes with first-aid posts along the route and at the finish line was 54. The number of individuals seeking care was 52 out of a total of 310 participants (17%), two runners making contact twice with medical staff. The injuries observed were grouped into the following five main categories:

(a) Muscle cramps, (b) Non-specific complaints. This category included a diversity of problems that could not be grouped under the above headings such as nausea, vomiting, blisters, abrasions, chest tightness, dyspepsia, decreased hearing and tinnitus. (c) Hypotension occurring after the finish. (d) Orthopaedic injuries (e.g. sprained ligament, back pain, locking of knee). (e) Hypothermia.

Injuries occurred during the latter half of the race and were mainly of a musculoskeletal nature. Most of the injured athletes sought medical care at the finish line. It is possible that some runners ignored their symptoms when they first occurred and consulted the medical staff on finishing the race. A large number of runners experienced muscle cramps at the finish line and required muscle stretching for relief. Cramps mainly occurred in knee extensors, calf muscles and abdominal

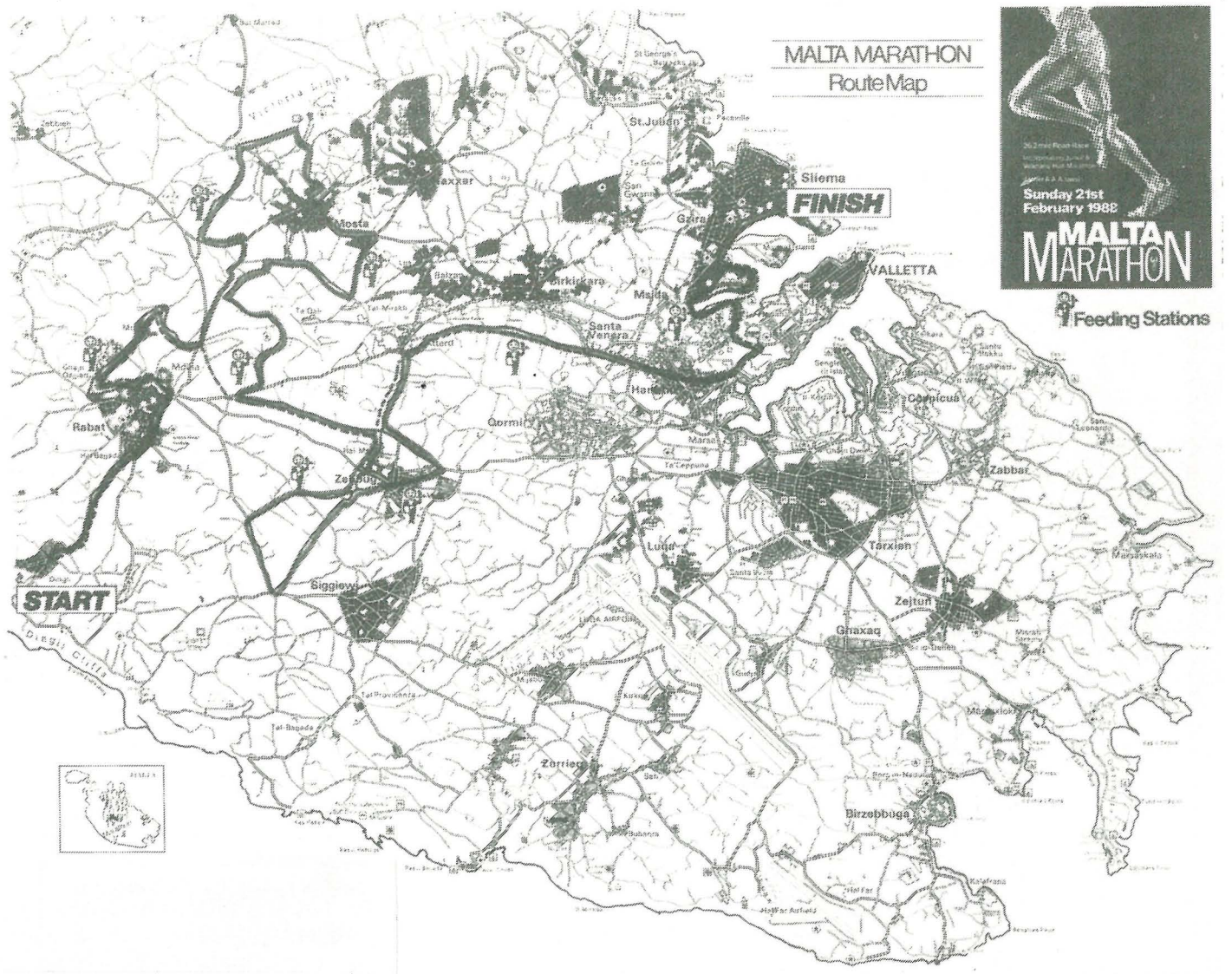

Figure 1: Drinking Stations.

muscles, the hamstring muscles being less commonly involved.

Hypotension secondary to hypovolaemia and vasodilatation a few minutes after the finish gave rise to about one fifth of casualties. None of the athletes required intravenous fluid replacement but responded well to rest, oral fluid therapy and elevation of the lower limbs.

TABLE 1.

	Muscle Cramps	Non-Specific	Hypotension	Orthopaedic	Hypothermia
Distance from start					
<20km	0	0	0	0	0
20km	0	0	0	1	0
25km	0	0	0	1	1
30km	5	1	0	0	0
40km	2	0	0	0	0
Finish 42km	16	14	10	3	0

Number of contacts made by runners with first-aid posts along route.

TABLE 2.

	Muscle Cramps	Non-Specific	Hypotension	Orthopaedic	Hypothermia
Males	19 (35%)	12 (22%)	10 (19%)	4 (7%)	1(2%)
Females	4 (7%)	3 (6%)	0 (0%)	1 (2%)	0 (0%)
	23 (42%)	15 (28%)	10 (19%)	5 (9%)	1 (2%)

Number of contacts made by runners with first-aid posts and frequencies N=54.

Eight of 54 contacts at first aid posts (15%) were made by female runners. 14% of participants commencing the race were female. Only one case was severe enough to warrant transfer to hospital. This was an athlete suffering from acute locking of the knee and he was eventually discharged that same day.

89% of participants (276) completed the event.

Discussion

Out of 310 runners, four presented with orthopaedic disorders, which involved the back and the lower limbs. Three of these runners managed to complete the marathon. One of the athletes presented with pain and numbness in the outer aspect of his right leg, which symptoms progressively got worse during the final 10 km of the marathon. He had a positive

"Tinel" sign over the neck of the right fibula and admitted to a past history of a right common peroneal nerve compression. A female athlete twisted her ankle two days before the marathon and twisted it again during the run. She subsequently developed gross swelling and marked tenderness over the calcaneofibular ligament of her left ankel with pain on passive inversion of the foot in keeping with a ligamentous sprain. The two other orthopaedic problems were back-pain and a locked knee. The participant with back-pain managed to finish the marathon but the individual who developed a locked right knee joint had to be taken to hospital where he gave a 5 week history of instability of the same knee.

Considering the number of runners and the often uneven road surface, the incidence of orthopaedic injuries was small and all the ones that presented had a significant past history relating to their complaint. This reflects the good state of musculoskeletal preparation of the participating athletes as a group.

Ligamentous injuries to the back or lower limb joints are bound to get worse during marathon runs where the state of the running surface and any prevailing winds increase the stress on the joints and their supporting ligaments.

Muscle cramps featured predominantly during the marathon run especially along the final 10 km. and at the finish. Muscle stretching exercises performed before the start, together with adequate fluid and electrolyte replacement during the run are simple precautions that runners should take in this regard.

It may thus be concluded that the medical facilities organised for a marathon event where 310 runners took part were adequate both for the number and variety of complaints. Although back-up facilities at the local general hospital were well geared for the event, no additional workload fell on the local health services.

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