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Sonography in the 29th Olympic and Paralympic Games: a retrospective analysis

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Abstract

Objective: The purpose of this study was to evaluate the application of sonography at the polyclinic of the Olympic/Paralympic village during the Olympic/Paralympic Games. **Methods:** We retrospectively reviewed 759 consecutive patients who underwent sonography at the ultrasound division of the polyclinic in the Olympic/Paralympic village from July 20, 2008, to September 20, 2008. Prevalence of emergency sonography after sports injury and non-sports-related urgent conditions during the games was analyzed. The benefit of sonographic services in large sporting events was discussed. **Results:** There were 759 patients (484 athletes, 101 coaches, 88 team officials, and 86 volunteers; 462 men and 297 women) in the ultrasound division at the polyclinic. The indications for sonography included abdominal pain (315 cases, 41.50%), muskuloskeletal disorders (228 cases, 30.04%), gynecology related (104 cases, 13.70%), cardiac conditions (49 cases, 6.46%), small parts (29 cases, 3.82%), and vascular problems (34 cases, 4.48%). The rates of positive findings on sonography were 46.03% in the abdomen, 70.17% in musculoskeleton, 41.34% in gynecology, 10.20% in the heart, 75.86% in small parts, and 38.24% in vessels, respectively. **Conclusion:** Sonography plays an important role in the medical services at the polyclinic in the Olympic/Paralympic village. The benefits of sonography in such large sporting events are accuracy, fast result, portability, and noninvasiveness.

Keywords: Olympic Games; Paralympic Games; Sonography

1. Introduction

Sonography, a noninvasive imaging modality with good portability and accuracy, has received special attention from specialists in sports medicine. Using sonography as part of the medical services in the Olympic/Paralympic Games was a great experience and a tremendous challenge for Chinese sonologists who needed to provide the athletes, officials, and visitors with satisfactory service. It is important to share the experience on how to handle a large number of patients from all over the world in a temporary office setup near the location of sports competitions and in such a short period of time. In addition to sonographic exams, there were differences in culture, language, and religion among patients, which should be taken into consideration during patient care. There were only a few publications regarding the use of sonography in the athletes' residence in major international sporting events [1–3]. The aim of our report was to evaluate the usefulness of sonography in the medical services at the polyclinic in the Olympic/Paralympic village through summarizing indications and prevalence in the 29th Olympic/Paralympic Games. Our report may eventually provide Olympic officials and medical teams with referential information for planning ultrasound services for future Olympic/Paralympic Games and for other large sporting events.

2. Materials and methods

2.1. Patients and referral

There were 759 patients (male/female=462:297, age range 16–71 years, mean age 30.9±14.2 years) who

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underwent sonography at the polyclinic in the Olympic/Paralympic village between July 20, 2008, and September 20, 2008.

The sonography examinations were requested by polyclinic clinicians or sports team physicians. Further assessment with other imaging modality (computed tomography or magnetic resonance imaging) after sonography was suggested by the physician at the ultrasound division and decided by a referral physician.

2.2. Sonography

The sonography examinations were performed with Logiq 9, Vivid 7, Vision 730, or Logiq e Duplex devices (General Electric, Milwaukee, WI, USA) equipped with 4C curved linear, 7L linear, and M3S sector transducers for abdominal, gynecologic, vascular, small parts, musculoskeletal, and echocardiographic sonography, respectively.

Some patients were asked to fast for 6–8 h prior to abdominal sonography or to have a full bladder for male or female pelvic sonography. However, cases with acute and severe abdominal or pelvic pain were scanned immediately as patients walking in the ultrasound division. Female pelvic sonography was performed transabdominally. There was no specific preparation for vascular, small parts, musculoskeletal sonography, or echocardiography. Patients were positioned supine or decubitus for abdominal, vascular, musculoskeletal sonography, and echocardiography.

Patient's privacy and confidentiality were considered and maintained in sonographic services. All sonographic images were stored in the hard drive of the ultrasound scanner. Hard copies of the images on black/white thermal paper (Sony video graphic printer UP-890CE, Sony Corporation, Japan) were given to the patients for their reference and further medical care when they return to their country if they requested them. The referral physician was informed of the sonography result immediately after the exam by phone or printed report of the sonography in English. The patients returned to the physicians in the polyclinic or to their team physician after the sonography.

2.3. Ultrasound personals

Nine experienced and licensed physicians selected from major hospitals in Beijing were responsible for scanning the patients, interpreting the images, and dictating the report of all sonography (sonography was performed by the physicians as there are no ultrasound technologists in China). There were four medical students from Capital Medical University who worked as volunteer receptionists in the polyclinic.

2.4. Working schedule

Four doctors and two volunteers adequately staffed each shift working in the Olympic village polyclinic and three doctors and one volunteer in the Paralympic village polyclinic from 8 a.m. to 11 p.m. The patients were then transferred to the hospital providing medical service for the Olympic Games during 11 p.m. to 8 a.m. All the doctors and volunteers in the Olympic village spoke English. The translators in the reception office provided major languages, but the translations through telephone could provide for all other languages.

3. Results

3.1. Composition of the patients

There were 759 patients (462 men and 297 women) in the ultrasound division at the polyclinic in the Olympic/Paralympic village, of whom 495 patients (65.22%) were in the Olympic village and 264 patients (34.78%) in the Paralympic village (Fig. 1). The total of number of patients was 9803 and 2899 in the Olympic village polyclinic and in the Paralympic village polyclinic, respectively. There were 5.04% (495/9803) and 9.11% (264/2899) patients who underwent sonography in the Olympic village polyclinic and in the Paralympic village polyclinic, respectively. The patients in the ultrasound division included 484 athletes (63.77%), 101 coaches (13.31%), 88 team officials (16.59%), and 86 volunteers (11.33%) (Fig. 2).

3.2. Distribution of sonographic examinations

There were a total of 315 (41.50%) abdominal, 228 (30.04%) musculoskeletal, 104 (13.70%) female pelvic, 49 (6.46%) echocardiographic, 29 (3.82%) small parts, and 34 (4.48%) vascular sonography examinations at the polyclinic in the Olympic/Paralympic village (Table 1). Of these, 210 (42.42%, abdominal), 146 (29.49%, musculoskeletal), 66

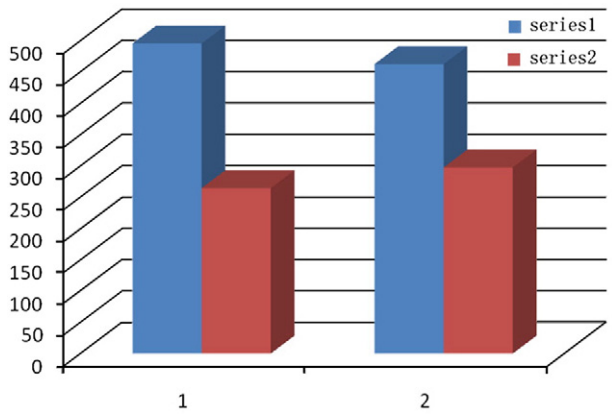

Fig. 1. Composition of the patients: Serial 1: the number of patients at the polyclinic (blue—the number of patients in the Olympic village; red—the number of patients in the Paralympic village); Serial 2: the number of patients in the ultrasound division (blue—male patients; red—female patients).