

Seafarer with solitary, well-functioning kidney — fit for service at sea without restrictions?

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ABSTRACT

A 20-year-old, healthy man, who four years earlier had lost a kidney in a skiing accident, applied for a medical fitness certificate for service on board German flag vessels. Under reference to national and international regulations he was initially turned down, but attained permission to sail on appeal. We discuss the justification of denying persons with a single, well-functioning kidney the opportunity to work at sea, conclude that there is no good reason to refuse a fitness certificate, and propose to change national and international regulations accordingly.

Key words: fitness of seafarers, single kidney, case report, assessment proposal

INTRODUCTION

In many shipping countries, only physicians personally authorized by a central maritime medical service are allowed to conduct medical fitness examinations of seafarers and to issue Medical Certificates for Service at Sea. In Germany authorization is provided by the Maritime Medical Service, previously of the See-Berufsgenossenschaft and since 2010 of the Ship Safety Division, BG Verkehr. A seafarer must, by law, have a valid fit-for-duty certificate to join a German flag vessel. Authorized physicians have to follow the official German "Regulation on Medical Fitness for Service at Sea" [1]. If a serving seafarer or a new candidate is found unfit by the authorized physician, but is unwilling to accept the decision, he or she has the right to appeal and ask for re-assessment at the Maritime Medical Service in Hamburg.

THE CASE

In 2008, after having finished school, a 20-year-old man presented himself to an officially authorized physician in Germany and asked for a Medical Certificate for Service at Sea. He wanted to become a nautical officer. It was his first medical examination for service at sea; he was a new candidate for deck service on board German flag vessels.

All medical findings were normal or sufficient; however, he has a surgical scar on his right flank. His right kidney had been removed following a renal rupture caused by a private skiing accident four years earlier.

The physician followed the official German Regulation which assesses a person unfit for service at sea if one kidney is missing, is unable to function, or is lost or removed — especially if the

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person is a new candidate [1]. So this young man was declared medically unfit for service at sea.

After having discussed this assessment with his urologist he sent an appeal through his lawyer to the Maritime Medical Service in Hamburg together with a report from his urologist. It stated that the remaining left kidney was working normally and was compensating for the missing right kidney.

The Maritime Medical Service in Hamburg found it difficult to locate literature, publications, or reasons to justify the assessment of unfitness for service at sea or even to justify restrictions if the remaining kidney has normal function. It finally decided in 2009 that even as a new candidate the person described above could be declared fit for service at sea without any restriction – the only condition being that all follow-up examinations should be conducted at the Maritime Medical Service in Hamburg and always with presentation of a recent report from the controlling urologist.

INTERNATIONAL GUIDELINES

Annex C of the international ILO/WHO “Guidelines for Conducting Pre-sea and Periodic Medical Fitness Examinations for Seafarers” is a list of medical conditions “which might justify restrictions on time, position, trade area, type of ships, or medical surveillance, or render the examinee temporarily or permanently unfit” [2]. Under heading number 11, “Conditions of the genito-urinary system”, the condition “Removal of one kidney” is listed.

Meanwhile, the “Working Group on Medical Fitness Standards” of the International Maritime Health Association (IMHA) has been busy developing a draft of proposed revisions to the ILO/WHO Guidelines. In this draft, which is still under consideration and not yet published, “Removal of Kidney” is proposed as a reason/justification for “P (= Permanently unfit) if there is any reduction of function in the remaining kidney in a new seafarer or significant dysfunction in the remaining kidney of a serving seafarer.”

DISCUSSION

This case was presented during the 3rd International NIVA Course on ‘Seafarers’ Occupational Health Examinations’ in early June 2010 in Gothenburg. Among the participants there seemed to be consensus that one well-functioning kidney should be enough for unrestricted seafaring. The question is: Is there support for this view in the medical literature?

There are basically two questions that need to be answered:

1. Is a seafarer with one instead of two kidneys at an unacceptably higher risk if injured?

2. Has a seafarer with one healthy kidney an unacceptably higher risk of developing progressive renal failure and complications like hypertension than a seafarer with two kidneys?

Re. 1: Before 1994, the American Academy of Paediatrics (AAP) identified the presence of a single kidney as a disqualifying condition from contact/collision sports. Since then, the AAP has recommended a “qualified yes; pending individual assessment” [3]. The 2008 policy statement from AAP on “Medical Conditions Affecting Sports Participation” proclaims that protective equipment “may reduce risk of injury to the remaining kidney sufficiently to allow participation in most sports, providing such equipment remains in place during activity” [4]. The recommendations are based on studies that suggest that the risk of renal injury in contact or collision sports is extremely low [5]. In fact, kidney injury from sports is much less common than injuries of the brain, spinal cord, and heart, and athletes with a single brain, spinal cord, and heart are allowed to play without restrictions [3]. Like the outcomes of sports participation, the benefits of seafaring for motivated candidates will outweigh the minimal risk of renal injury.

Re. 2: In response to the loss of one kidney, the contra-lateral kidney undergoes compensatory growth, a phenomenon that occurs even in the foetus with a single functioning kidney [6]. Outcome data from patients with congenital solitary kidneys are limited, but Sanna-Cherchi et al. [7] found a higher risk of progression to end-stage renal failure in patients with a congenital single kidney than in other congenital urinary tract anomalies, except posterior urethral valves. This might suggest potential subclinical defects of the solitary kidney [7]. Others have also shown that adults with unilateral renal agenesis and children who have undergone unilateral nephrectomy, mostly for congenital anomalies, are at increased risk of proteinuria, hypertension, and renal insufficiency [8, 9]. Zaffanello et al. [10] caution that prediction of long-term renal morbidity in congenital functioning solitary kidneys is complicated by the great variability of renal and extrarenal phenotypes.

In contrast, follow-up data from persons who have had one kidney surgically removed because of injury or kidney donation are generally associated with a favourable outcome: Healthy US Army personnel who lost a kidney due to trauma during World War II did not have increased mortality after 45-years of follow-up, and the prevalence of hypertension was not increased in living subjects [11]. Scandinavian

studies show that healthy kidney donors had a higher survival rate after 20 and 32-years, respectively, than the general population of the same age [12, 13]. Furthermore, Norwegian male kidney donors had the same relative risk for mortality as another screened population accepted for health insurance [14]. In a meta-analysis comprising more than 3,100 nephrectomised patients and 1700 appropriate controls, no increment in incidence of hypertension was found and there was no indication that unilateral nephrectomy caused progressive renal dysfunction [15]. Among 3,698 kidney donors undergoing unilateral nephrectomy between 1963 and 2007, survival was similar and the rate of development of end-stage renal disease was actually lower than in the general population [16]. This is presumably attributable to the stringent health screening provided for prospective donors, which selects candidates lacking known risk factors for progression to renal insufficiency.

Furthermore, US kidney donors can obtain health insurance without increased cost [17], a fact often cited as an indication of the safety of donation.

CONCLUSIONS

The benefits of seafaring for the individual outweigh the minimal risk of injury to a single, well-functioning kidney. There are some differences between the long-term outcomes of patients who have a solitary kidney resulting from congenital urinary tract anomalies and those of healthy persons undergoing unilateral nephrectomy.

Persons with congenital solitary functioning kidney may have a higher risk of developing proteinuria, hypertension, and renal insufficiency over time and should be subjected to more extensive investigations by a nephrologists/urologist as part of the pre-sea examination, and a certificate for unrestricted seafaring should carry the condition that a nephrologist consultation must precede subsequent certifications. Persons who have lost one kidney following injury or kidney donation can be declared fit for duty at sea without restrictions once it has been established that the remaining kidney is normal, and they need only be subjected to the same routine follow-up examinations as seafarers with two normal kidneys are. We recommend that the international ILO/WHO Guidelines, as well as national regulations, are revised accordingly.

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