Long-term Follow-up of Iranian Veteran Upper Extremity Amputees From the Iran-Iraq War (1980–1988)

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Background: Despite their frequency, there are limited reports concerning long-term follow up of upper limb amputation among battle-injured patients, which occurred at a young age. The purpose of this study was to evaluate how well these patients function years after their injury.

Methods: The study consisted of a thorough assessment and examination and review of the history and war time medical records of 25 Iranian veteran amputees from imposed Iran-Iraq war with a comprehensive survey including a detailed questionnaire. Information was analyzed and compared with limited similar reports in the literature.

Results: Out of 200 war amputees there were 25 unilateral upper limb amputees; all others were lower limb amputees. The average age at the time of injury was 23.06 years, average age at follow-up was 41.55 years, and the average time between injury and follow-up was 17.5 years. The most common level of amputation was below elbow (40%), and the most common cause of war injury was artillery shells, mortar or rocket shells. The prevalence of clinical symptoms of phantom sensation, phantom pain, phantom movement and stump pain were; 64%, 32%, 20%, 24%, respectively. All patients were married (100%) and had children except one case (96%). Sixty percent of patients were employed. Thirty-six percent had a documented psychiatric history ranging from minor depression to posttraumatic stress disorders.

Conclusion: The study showed—despite long period of time between war, amputation, and follow-up—there is a significant rate of amputation symptoms, but on the other hand good family and social function of the patients.

Key Words: Amputations, War amputation, Upper limb amputation, Iran-Iraq war, Phantom pain, Posttraumatic stress disorder.

RESULTS

Of our 25 upper extremity amputees, the average age at the time of injury was 23.06 years and the average age at follow-up was 41.55 years. The average time between injury and follow-up was 17.5 years.

Review of the 25 patients’ war medical records/questionnaires indicated 8 of the amputees (32%) were wounded by mortar, artillery, or rocket shells, 7 of them were wounded by land mines (28%), 5 patients (20%) by direct bullet, and the last 5 by grenade explosion (20%).

Regarding the type of amputation, 10 cases (40%) were of primary type, whereas 15 cases (60%) were of secondary type.

Amputation occurred in 10 cases below elbow (40%), 8 cases above elbow (32%), 5 cases of wrist disarticulation (20%), 1 elbow disarticulation (4%), and 1 shoulder disarticulation (4%) (Table 1).

Sixteen patients (64%) complained of phantom sensations ranging from occasional feeling to persistent bothering sensation of the missing part. Eight (32%) had the problem of phantom pain, 5 (20%) in addition to phantom sensation had occasional shaking motions of it which is named as phantom movement, and stump pain accounted for 6 cases (24%) which were caused by neuroma, overgrowth, and sensitivity dermatitis to the prosthesis (Table 2).

Fifteen patients (60%) were employed, whereas 10 amputees never worked again after their injury.

Six patients (32%) reported use of psychological support service because of posttraumatic stress disorder, depression, nervosa and difficulty with impulse control. All of the 25 amputees were married and except one, (96%) had children (Table 3).

Table 1 Level of War Amputation

<table>
<thead>
<tr>
<th>Amputation</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Shoulder disarticulation</td>
<td>4%</td>
</tr>
<tr>
<td>Above elbow</td>
<td>32%</td>
</tr>
<tr>
<td>Elbow disarticulation</td>
<td>4%</td>
</tr>
<tr>
<td>Below elbow</td>
<td>40%</td>
</tr>
<tr>
<td>Wrist disarticulation</td>
<td>20%</td>
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</tbody>
</table>

Table 2 Amputated Upper Limb Symptoms

<table>
<thead>
<tr>
<th>Phantom Sensation</th>
<th>Phantom Pain</th>
<th>Phantom Movement</th>
<th>Stump Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>64%</td>
<td>32%</td>
<td>20%</td>
<td>24%</td>
</tr>
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</table>

Table 3 Social, Family, and Psychological Function of the Amputees

<table>
<thead>
<tr>
<th>Employment</th>
<th>Married</th>
<th>Children</th>
<th>Psychological Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>60%</td>
<td>100%</td>
<td>96%</td>
<td>36%</td>
</tr>
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</table>

DISCUSSION

Amputation is among the oldest surgical procedures, which man has done for religion, punishment and therapeutic purposes.4

There are limited resources in medical literature concerning long-term problems of war-related amputations and most amputation reported in the literature deals with lower extremity amputation.5 War amputations usually occur in young active healthy adults who take part in military conflicts. According to most studies in the literature, land mines are the most common cause of war-related amputation in the past five decades.1–3,6–8 In our series of 168 lower limb amputations, the land mine was the leading cause of war injury, but the current upper limb study the leading cause of war injury resulting in amputation was artillery, mortar, and rocket shells. But overall the most common cause of war-related limb amputation regardless of upper or lower and level of amputation is the land mine explosion.1–3,6–8

On the other hand, generally the war-related upper limb amputation is not as common as the lower. Dougherty, in a review of 495 cases of Vietnam War amputations, reported 13.5% of his series had upper limb amputation.6–8 Wartan et al., in a series of 590 cases of British veteran amputees, reported 18.5% had upper limb amputation.9 Dillingham et al., reported 14% of their 21 amputees from the Persian Gulf War were upper limb amputees.10 In our study on 200 Iranian veteran amputees, we had only 25 cases (12.5%) of unilateral upper limb amputations (Table 4).

In 1871 Silas Weir Mitchell published his article on phantom limbs, and gave us this term that has had universal usage. The phantom limb can be either painless, termed phantom limb sensation, or painful, termed phantom limb pain.11

Phantom sensations are present in virtually all patients with limb amputation, and about 50% to 80% of all amputees develop phantom limb pain, which leads to permanent disability in more than 40% of the patients. Phantom limb sensation and pain gradually decrease with time.12–14

In this study, we had 16 patients (40%) complaining of phantom sensation and 8 patients (32%) suffering from phantom pain.

Lacoux et al., in a short-term study on 40 cases of upper extremity amputees of the Siraleon civil war (1990–1994), reported 90% had phantom sensation and 29% had phantom pain.15

Therefore, our patients had a lower rate of phantom sensation and a reasonable lower rate of phantom pain, which we think is related to the long-term postamputation period.
But there are no counterpart long-term studies in the English literature with which to compare these symptom rates.

Similar to most measures of quality of life, employment of patients after amputation is not well documented in the medical literature. The occupation rate of our patients was 60%, which is equal to our patients who had neither phantom pain nor severe psychological problems. In studies from Japan and Netherlands on lower limb amputees, Makoto et al and Schoppen et al. reported their employment rate between 50 to 60%.

Dougherty in a long-term follow up of veteran war-related lower limb amputees, showed that 52% of those in his series needed psychological care and Schlenger in a similar study showed a 35% prevalence of psychological problems. There are also no upper limb war-related amputation long-term counterpart studies to which our results on employment rate, psychological problem prevalence and marital status and family functioning could be compared, although Dougherty studied these in lower limb amputees. Regarding rates of marriage, having children, and being employed, we can conclude, despite some amputation clinical symptoms, that our patients are doing well years after war-related amputations and were able to maintain a stable personal life and social role.

The results of our study are important because of their unique characteristics; all subjects had healthy limbs prior to the war injury and sustained amputation at a young active age. Finally, there are no similar counterpart studies in the English literature. The problem of this study is that no quantitative outcome scoring for quality of life was used.

Future research should focus not only on studying the prevalence, frequency, and duration of phantom limb symptoms and residual limb problems of long-term upper limb amputation, but also should focus on the impacts of such sequelae on the person’s quality of life and functional ability, including vocational and psychosocial functioning.

It would be important for researchers to examine the potential physiologic, biomechanic, and psychological factors that may put some persons with amputations at risk for developing significant pain-related disability.

REFERENCES

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