A Review of Neurological Abnormalities Associated with the Practise of Music


G O Connor, B McNamara
Department of Neurophysiology, Cork University Hospital, Wilton, Cork

Abstract
A number of neurological abnormalities associated with the playing of musical instruments have been described which can cause great difficulty for performers. However, there has been no attempt to consider this in an Irish context, a cultural setting which encompasses an unusual range of playing styles and musical instruments. We performed a retrospective assessment of musicians referred to our service for neurophysiological testing. In this series of 17 musicians, most (94%) had more than one abnormality on testing. We discovered fifteen cases of carpal tunnel syndrome, eleven cases of ulnar neuropathy, and four cases of focal dystonia. Compared to previously published reports, our series contains a greater proportion of amateur musicians, a group not well studied in the literature.

Introduction
A number of neurological abnormalities associated with the playing of musical instruments have been described. These cause great difficulty for performers, and can lead to considerable distress, pain, and loss of earnings or career. However, there has been no attempt to consider this in an Irish context, a cultural setting which encompasses an unusual range of playing styles and musical instruments. We performed a retrospective review of cases referred to the Neurophysiology departments of the Cork University and Mercy University Hospitals from 1/1/2000 to 31/12/2005. Cases were included when the symptoms fell to be primarily related to, or worsened by, the playing of a musical instrument. Cases were categorised according to gender, age, instrument played, the intensity at which the musician played, the symptoms experienced and the outcome of neurophysiological testing.

Methods
A retrospective review was carried out of cases referred to the Neurophysiology departments of the Cork University and Mercy University Hospitals from 1/1/2000 to 31/12/2005. Cases were included when the symptoms fell to be primarily related to, or worsened by, the playing of a musical instrument. Cases were categorised according to gender, age, instrument played, the intensity at which the musician played, the symptoms experienced and the outcome of neurophysiological testing. Cases were included when the symptoms fell to be primarily related to, or worsened by, the playing of a musical instrument.

Results
The details of the patients in this series can be seen below in Table 1. A total of seventeen musicians were identified. Most patients (76%) were men. Eight (47%) of the total were amateur musicians, playing on a sporadic (< once / week) basis. There was a broad age range of patients (21-77 years). Most patients (59%) had more than one abnormality demonstrated. Carpal tunnel syndrome (CTS) was the commonest diagnosis made, with 15 cases identified. Eleven cases of ulnar neuropathy were demonstrated. There were four cases of dystonia. The symptoms experienced were pain and paraesthesia in those with nerve entrapment syndromes, and weakness in those with a focal dystonia.

Discussion
Our series demonstrates a number of points in relation to neurological abnormalities in the practice of music. The male predominance in our series is different from other groups which have shown a female predominance. The number of amateur musicians in our series gives us a view at a group which has previously been studied, as most previous studies have concentrated on students of music or professional musicians. The prevalence of accordance players in our series (two of the seventeen cases) is greater than other series, and may reflect the greater use of instruments in Irish music. However, there was no case involving instruments specific to Irish music such as the uilleann pipes, which can involve prolonged holding of unusual wrist postures, direct compression of the elbow, or rapid flexion/extension movements of the fingers, which other studies have identified as possible causes for neurological abnormalities in performers represented in this series, without an obvious predominance of any one type.

In our series, all cases of focal dystonia were in male patients, which is similar to other reported cases. Dystonia in musicians presents as a loss of voluntary motor control in extensively controlled movements, and estimates of prevalence in musicians vary between series. The cases of dystonia in our series are unusual in that two of the cases were in those who were not musicians practising at a more intense level, as dystonia is often associated with increased amounts of time spent practising or performing. CTS has been well described in performing artists, and our series demonstrates the high prevalence of this in performers. In our series, most patients affected were affected bilaterally. The disorder was seen in those who practised all instrument types. Ulnar neuropathy has also been well recognised in instrumentalists. Again, most patients affected were affected bilaterally. This group showed the most intense involvement in music, with five of the seven people affected being music students or professional musicians. The relatively larger number of musical students affected (three of the four students in the series) possibly reflects the impact of increased practise and immature playing technique.

Our series shows that the practise of music in Ireland is associated with the development of a number of neurological abnormalities, the symptoms of which are recognizable, and which are treatable. The identification of abnormalities in amateur musicians, including dystonias, may represent a previously unrecognized problem. Clinicians and performers should be more aware of the possibility of such abnormalities, to ensure earlier referral for treatment and investigation.

Correspondence: G O Connor
Department of Neurophysiology, Cork University Hospital, Wilton, Cork
Email: ged.oconnor@oceanfree.net

References