

The Short-term Outcome of Hand Problems in Music Students

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Abstract

Forty-nine music students who had presented to their university's health service for performance-related hand problems were followed by survey 1 year later. Of the 49 students, 28 (57%) responded to a mailed questionnaire, whereas another 10 (20%) were followed through their medical charts. Of these 29 females and 20 males, 19 were keyboard players, 17 string players, and 13 played an assortment of other instruments. Symptoms had been present a median of 4 months prior to the students' entry into the study (range 1 month to 3 years). The median duration of symptoms after presentation among those with complete resolution was 2 months. The duration of symptoms before and after presentation do not appear to be related. Women appeared to have a longer median duration of symptoms than did men (10 vs. 4 months). A majority of students reported increasing the frequency and duration of breaks during practice. We conclude that performance-related hand problems in this population have a generally good, although somewhat variable, outcome.

Our knowledge of performance-related hand problems in musicians has grown in the last five years, but much remains unclear. One area of uncertainty is that of outcome. What happens to musicians who seek medical care for a performance-related hand problem? How many recover, and how long does recovery take? How many still have symptoms a year later? To what extent is this syndrome associated with chronic functional impairment? Two papers have been published on this subject from major referral centers.^{1,2} We undertook the study described here in order to determine the 1-year outcome of performance-related hand problems in a music student population.

Patients and Methods

Forty-nine students at one university level music school sought care for a performance-related hand problem during the 1986–87 academic year. We sent all 49 students a survey in the spring of 1988, asking about their current symptom and performing status, changes in practice and

performance habits, and which treatments they had found helpful. We asked the patients to grade their symptoms on a slightly modified version of Fry's severity scale.³

Severity Scale

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- Grade 0—No pain at all
 - 1—Occasional pain while playing
 - 2—Always pain while playing. Pain ceases when you stop playing.
 - 3—Pain persists after playing.
 - 4—All common uses of the hand cause pain—housework, driving, writing, etc., but it is still possible to do these tasks.
 - 5—As for grade 4, except that disabling pain prevents any use of hand.
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A second mailing was sent to nonrespondents, and telephone follow-up was also attempted. The medical charts of these patients were reviewed for relevant information. Confidence intervals were calculated by standard methods.⁴

Results

Twenty-nine patients were female and 20 were male. They were equally distributed among the five academic levels (freshman through senior plus graduate students), except for a paucity of seniors.³ Nineteen played keyboard instruments, 17 were string instrumentalists, and 13 played other instruments. Their symptoms had lasted from 1 month to 13 years prior to presentation, with a median duration of 4 months. More than 75% of them had Grade 3 or Grade 4 symptoms at the time of presentation, with most of the remainder having Grade 1 symptoms. One patient had carpal tunnel syndrome, one had DeQuervain's tenosynovitis, and the others had an overuse syndrome of muscles and/or tendons.

Twenty-eight of 49 patients (57%) responded to the questionnaire. Follow-up information was found in the patient's medical chart in 10 other cases (20%). The interval from first visit to last follow-up was 8 months to 16 months. No outcome information was available for 11 students (22%), 6 of whom had left the school. Respondents and nonrespondents were similar in baseline characteristics (e.g., gen-

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der, class level, and instrument) except for duration of symptoms at the time of presentation, which was longer for respondents.

Nineteen of the 38 patients for whom outcome information was available (50%, with a 95% confidence interval of $\pm 16\%$) reported complete resolution of their symptoms and no restrictions on practice or performance at the time of last follow-up. The median time from presentation to resolution was 2 months. Another 13 patients ($34\% \pm 15\%$) reported significant improvement in symptoms and good functional outcome. Six ($16\% \pm 12\%$) had ongoing symptoms that limited ability to practice and perform. No respondents reported Grade 4 or 5 symptoms at follow-up.

Among the 23 patients for whom sufficient information was available, all ten patients who had had symptoms for less than 4 months prior to presentation resolved completely, whereas only 3 of 13 with symptoms for more than 4 months resolved completely. Women had a longer total symptomatic time (median 10 months, range 1 to 144 months) than did men (median 4 months, range 1 to 33 months). Fifty-eight percent of those who made a complete recovery reported increasing the frequency and/or duration of breaks during practice sessions, 25% had decreased their total playing time per day, and 25% reported a change in technique. Patients with ongoing symptoms reported making more changes than those whose symptoms had resolved.

Discussion

Before discussing the potential implications of these results, one must consider the limitations of this study. The sample size is fairly small (49), thus leaving a rather wide margin of error. For example, the 50% complete recovery rate could be as low as 34% or as high as 66% in a larger population, and the 16% chronic impairment rate could be as low as 4% or as high as 28%.⁴ Further studies will increase the precision of these figures.

Furthermore, the fact that we were unable to obtain any outcome data on 11 (22%) of our original cohort adds uncertainty as well. If all 11 were still symptomatic 1 year after presentation, the complete recovery percentage would fall to 39. We think this "worst case scenario" is unlikely, because the nonrespondents were similar to respondents in terms of most baseline characteristics, but the possibility should be kept in mind. Finally, one must remember that this study was done in a music student population from a "primary care" (as opposed to referral) clinic. Different outcomes might occur in other settings.

Nonetheless, our findings are remarkably similar to those already in the literature. Knishkowsky and Lederman¹ reported that among their 52 patients, in 72% symptoms had resolved or improved markedly, in 13% there was slight improvement, and in 15% there was no change 3 months to over 11 years after presentation. The median duration of symptoms in the first group was 1 year. Among their 19 patients with an overuse syndrome 2 (10%) were unchanged. Newmark and Hochberg² reported that 61 of 69 patients (88%) improved symptomatically, although 39 pa-

tients were lost to follow-up. The average time to improvement was 1.6 to 3.2 months. The similarity of the three studies suggests that these are reasonably accurate estimates of 1-year outcomes in this syndrome: roughly 75% of these patients will have a good outcome, but approximately one in seven will still have significant symptoms. It is unclear why these student-patients seen in a primary care setting did not have a better 1-year outcome than the patients seen by Knishkowsky and Lederman¹ in a referral setting.

The 49 students who are the study subjects of this paper are quite similar to the group reported earlier from this institution⁵ with respect to gender, instruments, and duration of symptoms. If we use the 8% incidence figure from the earlier report and combine it with the 50% incomplete recovery rate from this paper, we can construct a model that predicts the number of symptomatic musicians in a defined population as time passes. At time zero we start with 100 healthy instrumentalists. In the first year, eight develop a performance-related hand problem. Four recover completely and rejoin the other 92. The other four remain symptomatic for an indefinite period of time. Ninety-six healthy individuals start year 2, eight of whom develop symptoms, and four of whom become chronically symptomatic. By the end of 4 years, this model predicts that 15 of the original cohort of 100 would be symptomatic; this is probably an overestimate, since it assumes that no one recovers after 1 year. Averaging the predicted prevalence rates for each of the four years predicts that roughly 10% of students in all four classes would be symptomatic. This is very close to the 9% prevalence figure that Fry reported in Australian music students.⁶ These extrapolations are fraught with hazard, but the similarity of the predictions to published data tends to support both.

Summary and Conclusions

Most musicians who seek medial care for a performance-related hand problem will be back to their baseline level of functioning with few or no symptoms in less than a year. However, a significant minority, on the order of 15%, will be symptomatic and at least mildly limited in ability to perform. Further research is needed in order to improve our ability to treat and rehabilitate musicians with these problems. Of equal importance is research that will show us how to prevent these problems by identifying risk factors and by developing and evaluating preventive strategies.

References

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