

Reassessment of “Evidence-Based Medicine”

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INTRODUCTION

There is tremendous pressure on the medical profession to lower the costs of medical care, and physicians are now being challenged to prove that their services are of quantifiable benefit to obtain payment from insurance carriers (1). Objective evidence of efficacy in hand surgery includes quantitative data, such as pinch and grip strength (2), but factual data are subject to misinterpretation. There now exists strong financial motivation within the health care system to interpret this data in such a way as to control costs, specifically by

denial of payment for services that are not supported by “evidence.” The following case illustrates how easily the interpretation of seemingly straight-forward, clinically relevant, quantitative “evidence” can lead to a totally erroneous conclusion. Strict reliance on published medical “evidence” places the entire medical care system at risk for inappropriate restriction of care by payors seeking to avoid claims payment.

CASE REPORT

A healthy right-handed middle-aged male musician presented with a complaint of right “hand weakness.” A few days earlier, he experienced sudden onset of atraumatic pain in his dominant arm. This was followed the next day by inability to flex the end joints of his right thumb and index finger. There was no injury, and he did not have any history of numbness in the hand or arm, or any other illness. On physical exam he was noted to have inability to flex the FPL and the FDP of the index finger of his right hand. Grip strength on the right was 80/85/85 lbs. vs 90/95/90 lbs on the left. Pinch strength was 12/14/14 lbs. on the right and 12/15/15 lbs. on the left. The patient

was diagnosed with anterior interosseous nerve palsy, etiology unknown. EMG showed 1+ PSW in the PQ and FPL, with fibrillations in the PQ, and increased insertional activity in both muscles, and no voluntary recruitment in either muscle. There was also decreased amplitude and increased latency for the AIN in the antecubital fossa. MRI of the forearm showed edema in the FPL and PQ, consistent with denervation, and MRI of the median nerve above the elbow showed a 4cm segment of edematous nerve. No treatment was given, and the patient’s symptoms did not resolve with time.

DISCUSSION

Scientific evaluation of patients with a complaint of “hand weakness” would require quantitation of hand strength, typically by dynamometer measurements of grip and pinch strength. This patient complained of hand weakness, and this complaint reflected the AIN palsy demonstrable on physical exam. The etiology of this nerve problem remains unknown, but the diagnosis was confirmed by electrodiagnostic studies and MRI. In spite of his AIN palsy, the patient’s grip and pinch strength were normal for his age, and were almost identical for both hands.

Grip strength is primary a function of ulnar nerve innervated muscles, and would not be expected to change with an AIN palsy. The FPL and FDP IF are innervated by the AIN and are essential for normal pinch function. With an AIN palsy, patients can generate pinch strength by using the next most proximal muscles, and/or by using the ligaments of the thumb and index finger to provide resistance to force. These adaptations to AIN weakness are apparently sufficiently effective that pinch dynamometer strength measurement is maintained in spite of a complete AIN palsy. Pinch dynamometer assessment of pinch strength therefore precludes assessment of AIN function; instead it measures the patient’s adaptation to this weakness. If pinch dynamometer measurements are normal for

patients with AIN palsy, how clinically significant can this measurement be, in spite of the number being an objective, hard fact? Should all patients in the medical literature whose complaints are include “hand weakness” be evaluated for AIN dysfunction by some other method, as it is not demonstrable by pinch dynamometer?

Further, if treatment were available that somehow restored this patient’s AIN function, his clinical complaint would resolve, yet it would be difficult to prove by quantitative assessment of pinch or grip strength that he was better, as these measurements were normal before treatment. If one were to assess this patient solely on the basis of the quantitation of his complaints, as is often seen in chart reviews, RN/PA triage, and Independent Medical Examinations, without the benefit of examining his hand or understanding his diagnosis, one could easily conclude that this patient’s hand was not significantly weak. This would imply that either the patient was exaggerating his symptoms, or lying, when in fact the technique of quantitative assessment of hand strength by grip and pinch dynamometers is seriously deficient in some non-obvious way. From a payor’s perspective, the normal pinch and grip strength could be considered strong “evidence” that the patient didn’t actually have a problem, and treatment might be denied on this basis.

CONCLUSION

Even seemingly simple data such as pinch and grip strength must be interpreted carefully in the context of the patient’s complaints, exam, and complete diagnoses. This case demonstrates one of the underlying flaws of requiring “evidence” to demonstrate efficacy, as facts can contradict the truth. There may be poor correlation between the patient’s complaints and the data used to analyze and quantitate these complaints, even in straightforward cases. Our

current quantitative assessment techniques are at times inadequate relative to the complexity of the human body, and seemingly appropriate data can be misleading. As insurers require “evidence-based” treatment plans, one must carefully assess what is truly evidence, acknowledge the limits of our knowledge and understanding, and resist the misuse of facts by payors for financial purposes. Isolated facts are not necessarily “evidence” of anything.

References:

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