Evaluating DNA tests of motherless cases using a Philippine genetic database

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Transfusion. 2002, 42(7):954-958. In five percent of paternity determination cases, only DNA samples from the alleged father and child pairs are tested. The absence of the mother's DNA increases the probability of false paternity inclusions, which affects laboratories that use a limited number of DNA markers. The effect of coincidental matches between unrelated individuals on DNA tests of motherless cases was determined using the Philippine population genetic database of the National Capital Region (NCR). STUDY DESIGN AND METHODS: Seven short tandem repeat (STR) markers were used, namely HUMvWA, HUMTH01, HUMCSF1PO, HUMFOLP23, D8S306, HUMFES/FPS, and HUMF13A01. Values of the probability of paternity with (W) and without a mother ($W_{-mother}$) were determined using the equation W = cumulative likelihood ratio/cumulative likelihood ratio + 1). These values were determined for 50 volunteer families and compared with values calculated from randomly matched pairs in a reference NCR population database. RESULTS: The W and $W_{-mother}$ values of the 50 families range from 96.48 to 99.99 percent and 79.76 to 99.99 percent, respectively. In the NCR database, 195 coincidental matches in seven STR loci out of 5253 possible pairs (3.71%) were detected with $W_{-mother}$ values ranging from 12.47 to 99.83 percent. Of these, 53 and 10 random pairs have $W_{-mother}$ greater than 95.0 and 99.0 percent, respectively. CONCLUSION: W was higher than $W_{-mother}$ in the 50 families. However, the existence of unrelated individuals in the NCR database that randomly matched at seven STR loci and that has $W_{-mother}$ values greater than 99.0 percent highlights the need for greater precaution when dealing with motherless cases.

KEYWORDS
Motherless cases, Philippine genetic database, short tandem repeat, chance matches