Comment on: Clinical examination versus ultrasonography in detecting developmental dysplasia of the hip

Fenna Visser · Arwen J. Sprij · Cees F. A. Bos

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Dear Editor,

We read the article by Dogruel et al. [2], on the clinical examination versus ultrasonography in detecting developmental dysplasia of the hip, with interest. The purpose of this prospective study was to investigate the usefulness of clinical examination in detecting developmental dysplasia of the hip in infants, as defined by hip ultrasonography. This article is important because developmental dysplasia of the hip is a common, treatable disease, in which the most accurate screening procedure is still debatable. The authors concluded that clinical examination did not reliably detect developmental dysplasia of the hip.

Ultrasonography is frequently used as a screening tool in clinical practice, but this method can result in false positive results [3]. The American Academy of Pediatrics (AAP) guideline [1] recommends routine screening for developmental dysplasia of the hip through clinical examination by skilled personnel. In doubtful cases referral to an orthopaedic surgeon is useful. In infants with risk factors, irrespective of the results of clinical examination, ultrasonography should be considered.

Although ultrasonography is not the gold standard for the diagnosis of developmental dysplasia of the hip, we understand that it was used in this study to compare the results of ultrasonography with clinical examination. However, when

we recalculated sensitivity and specificity in the study by Dogruel et al., we found different values (see Table 1).

The sensitivity is $59/208=28\%$, which is the proportion of hips in which a pathological clinical examination was found in infants with pathological ultrasonography (true-positives). The specificity is $6502/6874=95\%$, which is the proportion of hips in which a normal clinical examination and normal ultrasonography were found (true-negatives). The reported 13.68% ($59/431$), in the article by Dogruel et al. cited as the specificity, is in fact, the predictive value of a positive test, i.e. the percentage of infants with ultrasonography defined dysplasia of the hip with a positive clinical examination. The percentage reported by the authors as sensitivity is, in fact, the prevalence of non-disease ($6874/7082=97\%$). These different values may influence the conclusions reached by the study.

From the results of the study described by Dogruel et al., we concluded that the sensitivity of clinical examination of the hip in diagnosing congenital hip dysplasia was very low. The question is whether this is due to the index test (the sensitivity of clinical examination is too low) or because of the reference test (ultrasonography used as the gold standard, but known to show false positive results). The specificity of clinical examination (95%) seems quite high. However, this study was performed on healthy infants, with a low a priori chance of 2.9% ($208/7082$). This percentage however is consistent with other study results.

Because of the high negative predictive value ($6502/6651=97.8\%$) we conclude that screening by physical examination is useful.

F. Visser (✉) · A. J. Sprij · C. F. A. Bos
Haga Hospital, Juliana Children's Hospital,
Sportlaan 600,
2566 MJ The Hague, The Netherlands
e-mail: f.visser@hagaziekenhuis.nl

Table 1 Clinical examination versus ultrasonography in terms of numbers of hips defined as normal or pathological (results Dogruel et al. [2])

Examination methods	Ultrasound pathological (<i>N</i>)	Ultrasound normal (<i>N</i>)	Total (<i>N</i>)
Clinical examination pathological	59	372	431
Clinical examination	149	6,502	6,651
Total	208	6,874	7,082

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