

# Comparing findings on physical examination and ultrasound in adults with haemophilia: a pilot study



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**Introduction:** Joint bleeds in patients with haemophilia cause synovial hypertrophy and progressive osteochondral changes. Physical examination using the Haemophilia Joint Health Score (HJHS) and ultrasound examination according to the Haemophilia Early Arthropathy Detection with UltraSound (HEAD-US) protocol have recently been developed to provide more detailed joint assessment. However, the value of HEAD-US in addition to HJHS has not yet been studied in adults with haemophilia.

**Methods:** In adult patients with severe haemophilia, HJHS and HEAD-US were performed during routine check-ups. First, a single trained physiotherapist performed the HJHS, subsequently a single trained medical doctor performed the HEAD-US examination of bilateral elbows, knees and ankles in each patient.

**Aim:** The aim of the current study is to compare HJHS and HEAD-US in adults with haemophilia

**Results:** Ninety joints of 15 patients were examined; results of 14/90 joints were excluded because of a joint prosthesis or arthrodesis. Patients had a median age of 53 (range 21-65). Correlation between HJHS and HEAD-US is shown in table 1. Twenty-six joints (34%) showed abnormalities on both HJHS and HEAD-US and 45 (59%) showed no abnormalities on both HJHS and HEAD-US. One joint showed abnormalities on HEAD-US but not on HJHS (figure 1). Four joints showed abnormalities on HJHS (loss of ROM and strength) but not on HEAD-US (figure 2a and b). All joints with HJHS >4 also showed abnormalities on HEAD-US (table 2). Additionally, 14 joints showed synovial hypertrophy on HEAD-US without detectable swelling on physical examination. All these joints had some other changes on physical examination (median joint score 5.5; IQR 3-7.25).

Table 1. Correlation between HJHS and HEAD-US

Joint	r
Elbows, n=28	0.808, p=0.000
Knees, n=26	0.985, p=0.000
Ankles, n=22	0.653, p=0.001
Overall, n=76	0.877, p=0.000

r= Spearman's rho

Table 2. Minimum and maximum scores on ultrasound for different HJHS scores

HEAD-US (N=76)	HJHS* = 0 (N=46)	HJHS* = 1-3 (N=9)	HJHS* = 4-6 (N=9)	HJHS* = 7-9 (N=10)	HJHS* = 10-12 (N=2)
Median (IQR)	0 (0-0)	2 (0-6.5)	5 (1-7)	6 (5-6.25)	5.5 (5-6)
HEAD-US = 0 (min)	45 (98%)	3 (33%)	1 (11%)	0 (0%)	0 (0%)
HEAD-US = 8 (max)	0 (0%)	0 (0%)	0 (0%)	1 (10%)	0 (0%)

\* HJHS at joint level (range 0-20)

**Conclusion:** In adults with haemophilia US may have additional value to physical exam by detecting the origin of slightly impaired function, or in revealing of early osteochondral changes in apparently healthy joints. The clinical relevance of such findings still needs to be explored

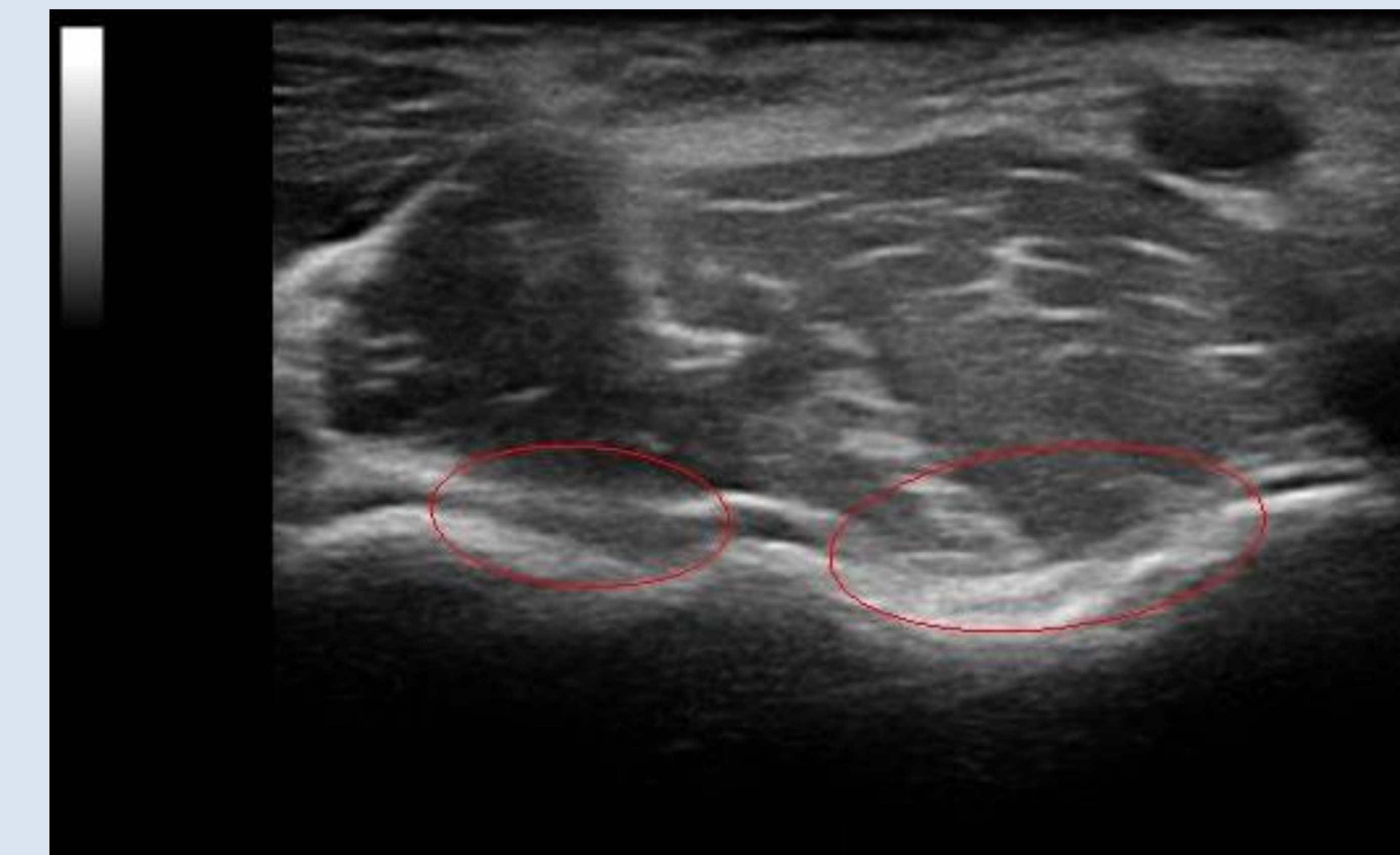


Fig 1a. Cartilage damage of the distal humeral epiphysis of the right elbow on ultrasound. No abnormalities were found during physical examination (HJHS at joint level=0).

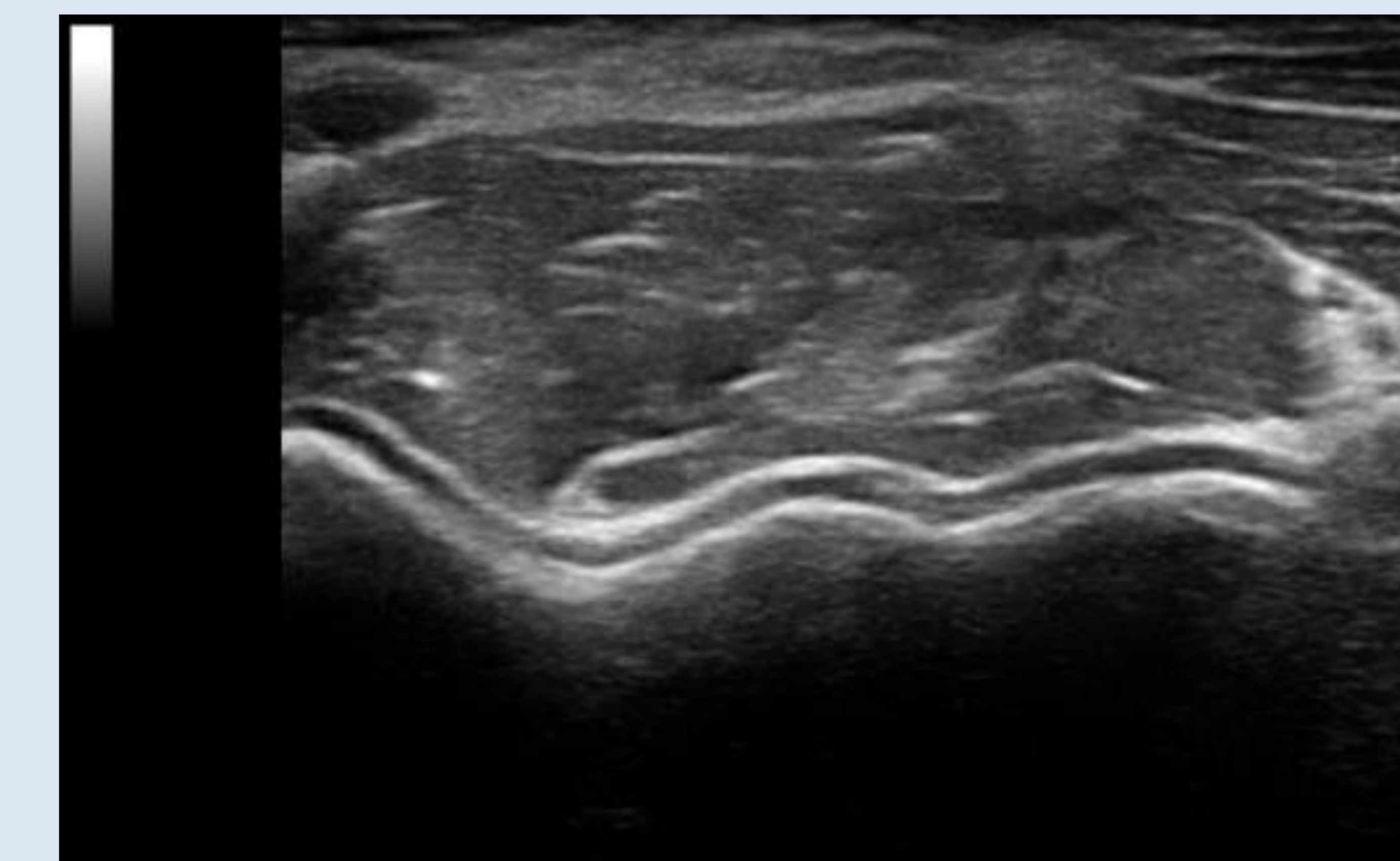


Fig 1b. Elbow joint without osteochondral changes (left elbow of the same patient).