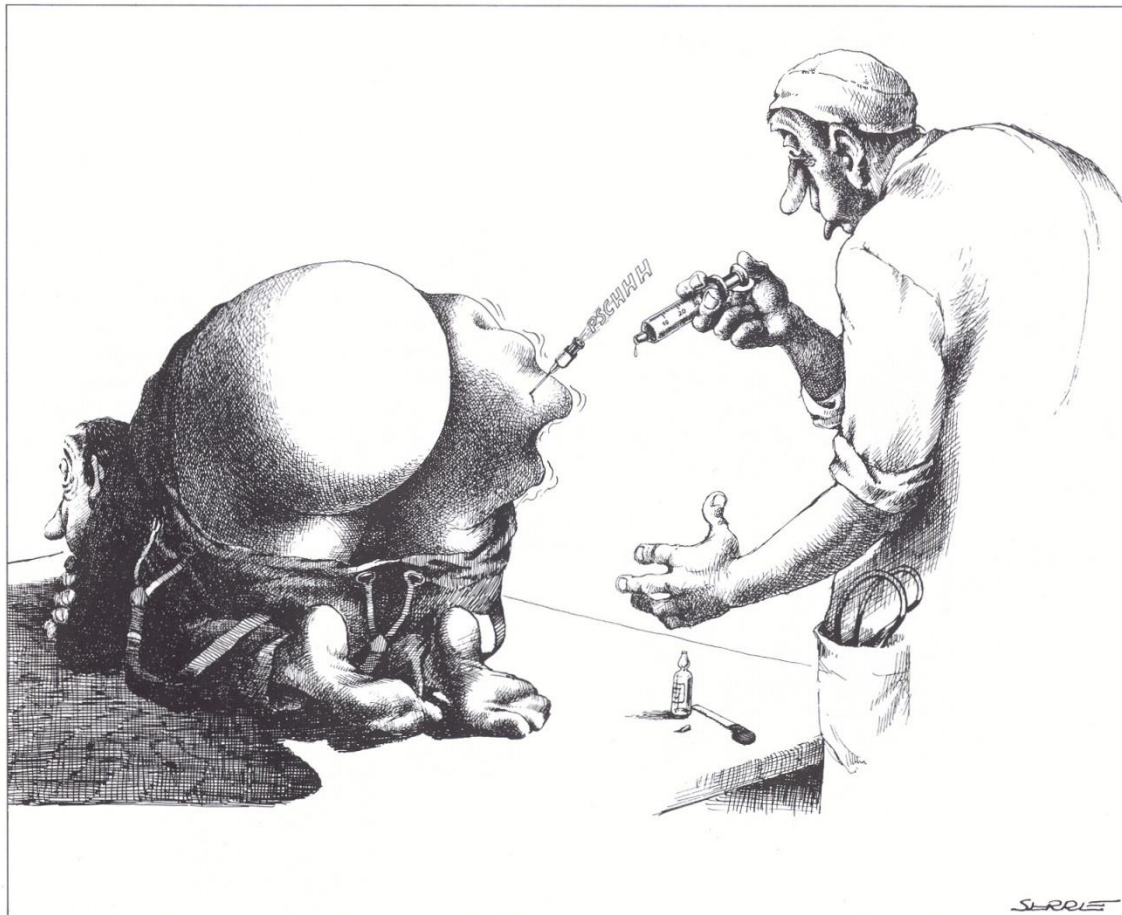


Donor vigilance Needle Injuries

Characterization of 240 needle injuries in Blood Donors

- 15th IHS 20-22 February 2013, Brussels.
- Karin Magnussen, Jens Halkjaer Kristensen and Mikkel Gybel, Copenhagen University Hospital, Rigshospitalet

Needle Injuries



Background

- Between 1999 and 2011; 240 donors with NI were referred for evaluation and possible treatment
- The donors were mainly from central Cph but since 2008 also donors from Greater Copenhagen have been referred

Background

- The donors were seen by Dept. of Rheumatology, Cph University Hospital
- Except for a few the were all seen by Dr. Jens Halkjaer Kristensen, Head of the Department
- All the serious NI were referred but also less serious when the donor was worried.

Population

- 239 Donors
- 240 Needle Injuries
- Men 100 women 138

	Mean	SD
Age	37.00	12.01
No. donations	22.90	25.41
Frequency	2.69	0.97

Fossa cubiti dxt.

Deep nerve

Artery

Vein

Tendon

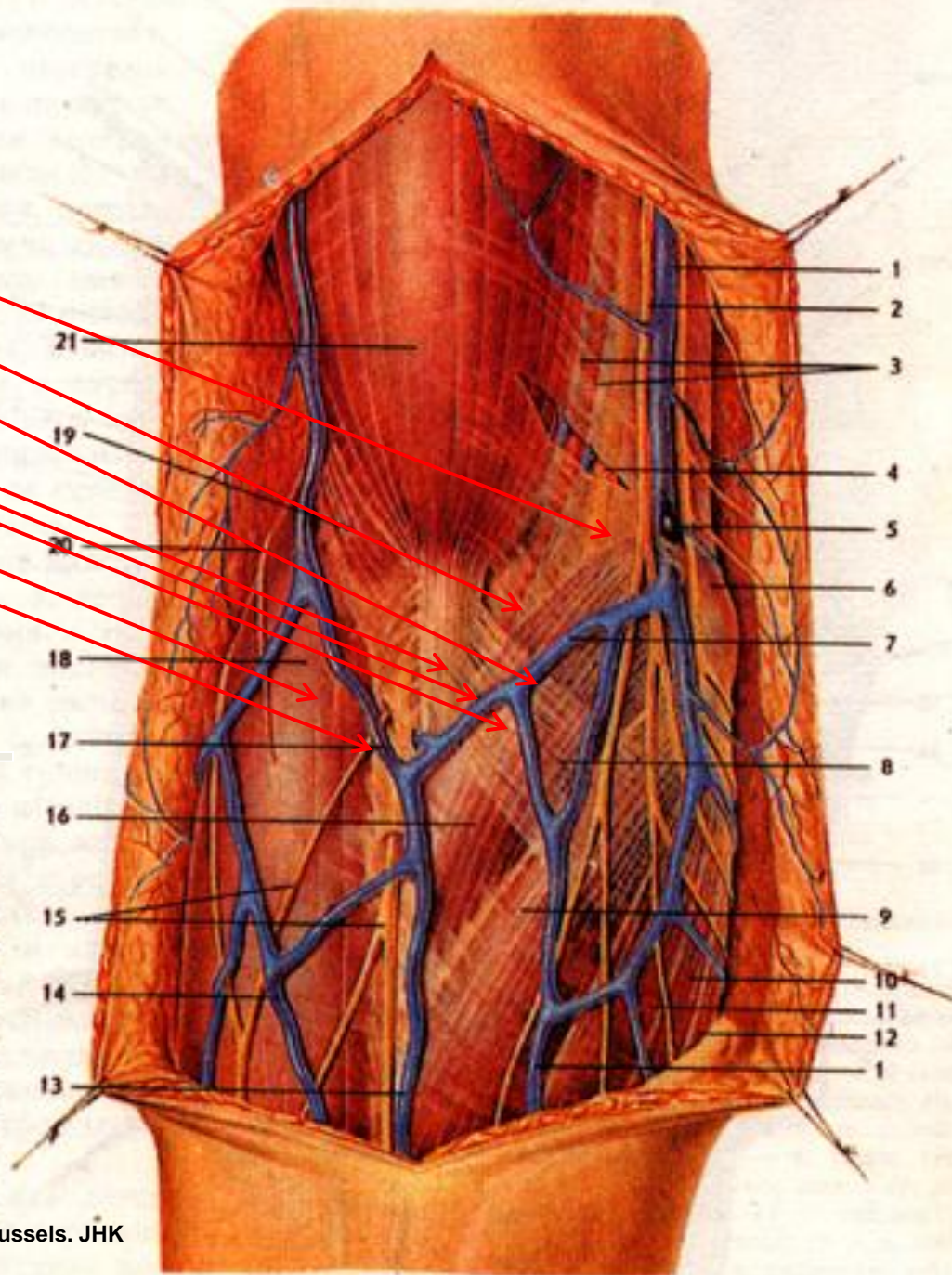
Muscle

Cutaneous nerve

10.

Поверхностные сосуды и нервы передней локтевой области.

1 — v. basilica; 2 — n. cutaneus antebrachii medialis; 3 — a. et v. brachiales; 4 — n. medianus; 5 — nodus lymphaticus cubitalis superficialis; 6 — epicondylus medialis; 7 — v. intermedia basilica; 8 — aponeurosis m. bicipitis brachii (fascia Pirogowi); 9 — m. flexor carpi radialis; 10 — m. flexor digitorum superficialis; 11 — m. palmaris longus; 12 — m. flexor carpi ulnaris; 13 — v. intermedia antebrachii; 14 — v. cephalica; 15 — n. cutaneus antebrachii lateralis; 16 — m. pronator teres; 17 — v. intermedia cephalica; 18 — m. brachioradialis; 19 — m. brachialis; 20 — n. cutaneus antebrachii posterior; 21 — m. biceps brachii.



Detailed history 1:

General;

- Former discomfort by venipuncture
- Number of previous donations,
- Handedness,
- Occupation, leisure, sport, etc.

Detailed history 2: Current donation

- Unusual pain by venipuncture, irradiating sensations, etc.
- "Search for" the vein, needle movement, pain, flow, duration
- Premature termination of donation
- Pain by removal of needle,
- Compression duration, bleeding, hematoma,
- Function of arm, soreness

Physical examination - 1

- Careful examination of both arms
- Circulation:
 - puls,
 - temperature,
 - Colour, etc.
- Neurological assessment:
 - sensibility,
 - Muscle function,
 - Reflexes, etc.
- Palpation:
 - fossa cubiti,
 - biceps – tendon and muscle,
 - Forearm muscles,
- Elbow joint, wrist and carpal tunnel
 - Movement, pain, etc.

Physical examination - 2

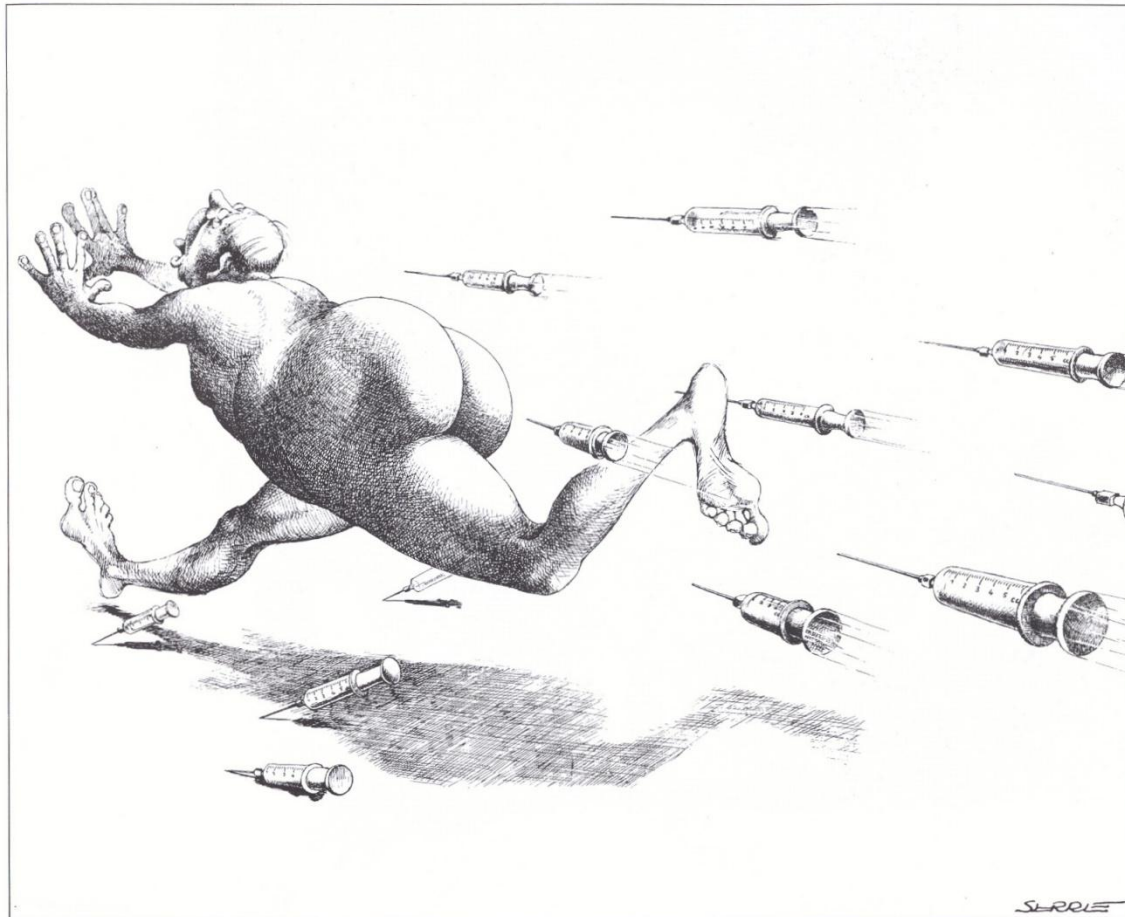
Further examination if symptoms:

- Shoulder,
 - Movement, pain, etc
- Cervical spine,
 - Movement, pain, etc.
- Fossa supraclavicularis
 - Pain, fill, etc.
- Other areas with symptoms, which the donor relates to the donation.

Conclusion:

- Thorough explanation of the most plausible causes of the symptoms, particularly in relation to all the diseases considered by the donor himself or his relatives.
- Explanation (everyday language) and images of :
 - Pain mechanisms,
 - Formation, treatment and recovery of hematomas, (particularly if it is localised intramurally or deeper in the tissue between muscles).

Inform rather than alarm!



Frequent complaints and findings (1)

- Unusual pain or tingling by venipuncture, often with diffuse radiation distally.
- +/- hematoma, no nerve damage but possible nerve irritation.
- Usually full recovery when hematoma disappears
- If complaints after 6-8 weeks, then ultrasound examination and/or neurophysiology. (Relevant to document for later use if insurance claim rather than actual treatment)

Frequent complaints and findings (2)

Hematoma: Subcutaneous / Subfascial / Perimuscular

- May cause nerve irritation volary in the forearm, palm and fingers.
- Usually full recovery in 1-3 weeks by ultrasound treatment, indicating no permanent nerve damage.
- Rare cause of Capal Tunnel Syndrome due to remains of hematoma or scar tissue from hematoma under the Carpal retinaculum with irritation/compression of n. medianus.

Treatment (1)

- Examination
- Information
- Carried out carefully and professionally

Treatment (2)

Ultrasound treatment

- Removes (remains of) hematoma in the subcutis, venus wall, in the deeper layers of the fossa cubity, or between muscles in the forearm.
- 1-2 W/cm², 5-8 mins, daily if possible, initiated from day 2, given 3-5 days.

Possibly Local application of NSAID as gel or creme (Felden, ibutop or similar).

Hematoma

- Any hematoma 176 (73%)
- Surface hematoma 148 (62%)
- Deep hematoma 68 (28%)
- Both 40 (17%)
- Pain local and/ or irradiating 95%(S) 99%(D)
- 65% continue as donors

Injury of cutaneous nerve

14 donors (6%)	Age 44 SD 11	No.donations 50 SD 36		Still donor 11 (79%)
Debut of symptoms	Venipuncture 8 (57%)	Withdrawal 3 (21%)	Both 2 (14%)	
Pain/sensory symptoms	Any 14 (100%)	Local 10 (71%)	Irradiating 9 (64%)	Both 5 (36%)
Hematoma	4 (29%)	Surface 2 (14%)	Deep 2 (14%)	Both 0
Persistence of symptoms	< 1 month 8 (57%)	< 3 month 1 (7%)	< 1 year 2 (14%)	Permanent Sensory 3 (21%)

Injury of deep nerve

11 donors (5%)	Age 38 SD 9	No.Donation 38 SD 19		Still donor 5 (46%)
Debut of symptoms	Venipuncture 5 (46%)	During don. 5 (46%)	Withdrawal 2 (18%)	2 of 3 5 (46%)
Pain/sensory symptoms	Any 11 (100%)	Local 10 (91%)	Irradiating 10 (91%)	Both 9 (82%)
Hematoma	4 (36%)	Surface 3 (27%)	Deep 1 (9%)	Both 0
Persistence of symptoms	< 1 month 3 (27%)	< 3 month 2 (18%)	< 1 year 3 (27%)	Permanent Sensory 2 (18%)

Irritative nerve injury

13 donors (5%)	Age 35 SD 13	No.donations 23 SD 27		Still donor 12 (92%)
Debut of symptoms	Venipuncture 6 (50%)	During 4 (31%)	Withdrawal 1 (8%)	Post donation 4 (31%)
Pain/sensory symptoms	Any 12 (92%)	Local 3 (23%)	Irradiating 2 (15%)	Both 7 (54%)
Hematoma	9 (69%)	Surface 4 (31%)	Deep 6 (46%)	Both 1 (8%)
Persistence of symptoms	< 1 month 6 (46%)	< 3 month 0	< 1 year 2 (15%)	Permanent Pain/Sensory 4 (31%)

Tendon injury (direct or irritative)

22 donors (9%)	Age 44 years SD 13	No.donations 34 SD 25		Still donor 11 (50%)
Debut of symptoms	Venipuncture 9 (41%)	Withdrawal 1 (5%)	Both 1 (5%)	Post donation 11 (50%)
Pain	Any 21 (95%)	Local 9 (41%)	Both 12 (55%)	Irradiating 12 (55%)
Hematoma	15 (68%)	Surface 14 (64%)	Deep 3 (14%)	Both 2 (9%)
Persistence of symptoms	< 1 month 6 (27%)	< 3 month 2 (9%)	< 1 year 8 (36%)	Permanent 3 (14%)

Hematoma in vein wall

"Intramural hematoma"

14 donors (6%)	Age 32 SD 11	No.donations 15 SD 15		Still donor 9 (64%)
Debut of symptoms	Venipuncture 9 (64%)	During 5 (36%)	Withdrawal 2 (9%)	Minutes-1 day post donation 4 (29%)
Pain	Any 13 (93%)	Local 12 (86%)	Irradiating 7 (50%)	Both 6 (43%)
Hematoma	8 (57%)	Surface 6 (43%)	Deep 3 (51%)	Both 1 (7%)
Persistence of symptoms	< 1 month 10 (71%)	< 3 month 0	< 1 year 2 (14%)	Permanent 0

Phlebitis

6 donors (2.5%)	Age 45 SD 10	No.donations 44 SD 40		Still donor 4 (67%)
Debut of symptoms	Venipuncture 1 (17%)	During 0	Withdrawal 0	Postdonation 6 (100%)
Pain	Any 6 (100%)	Local 6 (100%)	Irradiating 0	
Hematoma	2 (33%)	Surface 2 (33%)	Deep 1 (17%)	Both 1 (17%)
Persistence of symptoms	< 1 month 3 (50%)	< 3 month 2 (33%)	< 1 year 1 (17%)	Permanent 0

Sore Arm

15 donors (6%)	Age 41 SD 12	No.donations 38 SD 36		Still donor 6 (40%)
Debut of symptoms	Venipuncture 4 (27%)	Withdrawal 2 (13%)	Post donation 12 (80%)	
Pain	Any 15 (100%)	Local 13 (87%)	Irradiating 9 (60%)	Both 2 (13%)
Hematoma	5 (33%)	Surface 4 (27%)	Deep 2 (13%)	Both 1 (7%)
Persistence of symptoms	< 1 month 7 (47%)	< 3 month 3 (20%)	< 1 year 3 (20%)	Permanent 2 (13%)

Injury types	n	%
Local hematoma	148	61,9
Deep hematoma	68	28,5
Tendon	22	9,2
Cutaneous nerve	14	5,9
Vein hematoma	14	5,9
Nerve irritation	13	5,4
Deep nerve	11	4,6
sore arm	15	6,3
Muscle irritation (incl. muscle hematomas)	7	2,9
Phlebitis	6	2,5
Veinirritation	5	2,1
A-puncture	2	0,8

Conclusions and recommendations

- Systematic alternations between puncture sites to allow the scar tissue in the vein wall to mature (i.e. more than 3-5 months)
- Avoid repeated punctures and "searches for the vein"
- Avoid manipulation of the needle during donation to improve the flow.
- Careful compression 1-2 hours after removal of the needle.
- Avoid hard physical use of the arm, at least 4-6 hours after donation.
- Treat all complaints related to blood donation seriously and professionally!

Donor vigilance: We want to preserve our donors!

Thank you!

