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Original article

The non-ischaemic blue finger

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Finger discoloration may result from recognized conditions affecting upper limb vasculature. We describe 11 patients who presented with acute pain, swelling and blue/purple discoloration in a finger. This benign condition mimicked digital ischaemia. There were 9 women and 2 men. The episode usually started with an ache/pain in the finger followed 2–3 h later by a blue/purple discoloration primarily on the volar aspect but always sparing the tip. This completely resolved after 4–7 days with no residual deficit. There was no history of trauma. Four patients had had previous episodes – 2 had been started on warfarin. There was no family history and only one gave a history of spontaneous bruising of her legs. Examination of all patients – pulse rate, blood pressure, cardiac and subclavian artery auscultation and digital artery Doppler insonation – was normal. All patients had normal full blood counts, CRP, vasculitis screen and clotting (except those on warfarin). Six similar cases, all women, were reported in 1982. There was no common aetiological factor other than sex. Although of no prognostic significance, the condition is likely to concern patients and doctors in primary care. The discoloration is, however, clearly of a different distribution to that in an ischaemic finger where the tip of the digit is involved.

Key words: Acute blue finger – Ischaemia

Discoloration of the fingers may result from a number of problems affecting the vasculature of the arm. These include conditions involving the blood vessels (arteries and veins), the nerves and the blood constituents. In most of these conditions (see Discussion) there is a recognized problem and more than one finger may be affected simultaneously.

We describe 11 patients who presented to the Department of Vascular Surgery with acute onset of pain, swelling and blue/purple discoloration in a finger. The presentation mimicked digital ischaemia, but there were a number of features that did not fit previously described patterns of ischaemia.

Patients and Results

Eleven cases (9 women and 2 men) were encountered over the last 3 years. The details of their age, sex, occupation, past history, family history and significant

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Table 1 Details of the 11 cases presented including past and family history

Case	Age (years)	Sex	Occupation	Previous episodes?	Family history?	History of bruising?	Bruising elsewhere?	Significant past history	Significant medication
1	60	M	Florist driver	No	No	No	No	MI	–
2	60	M	Electronics	No	No	No	No	CABG	Aspirin
3	73	F	Retired	>10 years ago	No	No	No	HT, MI, CVA	Warfarin
4	54	F	Housewife	1 year ago	No	No	No	–	–
5	47	F	Receptionist	1 year ago	No	No	No	Breast cancer	Warfarin
6	70	F	Retired teacher	10–12 episodes	No	No	No	HT, Arthritis	–
7	58	F	Housewife	No	No	Yes	Legs	CVA (R arm)	–
8	39	F	Secretary	No	No	No	No	–	–
9	46	F	Home help	Yes	No	No	No	–	–
10	49	F	Child minder	Yes	Yes	No	No	Angina	Aspirin
11	50	F	Ward clerk	No	No	No	No	–	–

MI, myocardial infarction; CABG, coronary artery bypass graft; HT, hypertension; CVA, cerebrovascular accident.

Table 2 History of the presenting complaint in the 11 cases

Case	Digit involved	Prodromal symptoms	Duration	Duration of discoloration	History of trauma
1	Left little	Ache/pain/tingling	2–3 h	2–3 days	No
2	Right ring	Pain	24 h	3 days	No
3	Left index	None	–	3 days	No
4	Right middle	None	–	2 weeks	No
5	Right ring	None	–	1–2 weeks	No
6	–	Ache	1–3 h	1–2 weeks	No
7	Left middle	Pain	1–2 h	1–2 weeks	No
8	Left ring	Tingling/swelling	3–4 h	3–4 days	No
9	Left middle	Swelling/numbness	?	1 week	No
10	Various	Tingling/swelling	?	3–4 days	No
11	Left middle	None	–	4 days	No

Table 3 Investigation results for the 11 cases

Case	Hb (g/dl)	Platelets (x 10^9/l)	CRP (mg/l)	INR	ANA	ANCA	Other
1	15.8	260	2	1.0	–ve	–ve	Duplex of subclavian artery normal
2	14.1	273	5	1.0	–ve	–ve	Duplex of subclavian artery normal
3	13.5	198	< 10	3.1	–ve	–ve	Duplex of subclavian artery normal
4	14.7	200	2	1.0	–ve	–ve	Duplex of subclavian artery normal
5	12.4	257	3	Not done	–ve	–ve	Angiogram and echocardiogram normal
6	13.3	269	ESR = 12	1.0	–ve	–ve	Duplex of subclavian artery normal Capillaroscopy and echocardiogram normal
7	12.3	335	<10	1.0	–ve	–ve	Duplex of subclavian artery normal
8	13.6	281	5	1.0	–ve	–ve	ECG and subclavian duplex normal
9	12.2	259	ESR = 14	1.0	–ve	–ve	Duplex of subclavian artery normal
10	12.7	265	ESR = 27	1.0	–ve	–ve	ECG and subclavian duplex normal
11	13.2	189	ESR = 7	1.0	–ve	–ve	Cold agglutinins and duplex subclavian normal

Hb, haemoglobin; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; INR, international normalised ratio; ANA, anti-nuclear antibody; ANCA, anti-nuclear cytoplasmic antibody.

medication are shown in Table 1. The history of presentation in each case is outlined in Table 2.

None had cardiac murmurs or subclavian bruits pointing to an embolic aetiology. All had normal duplex scans of the subclavian and axillary arteries. The discoloration in all cases did not involve the tip of the digit (Fig. 1), but extended for a variable distance proximally into the hand. The investigation results are shown in Table 3. All of them were normal except for the INR in the 2 patients on warfarin.

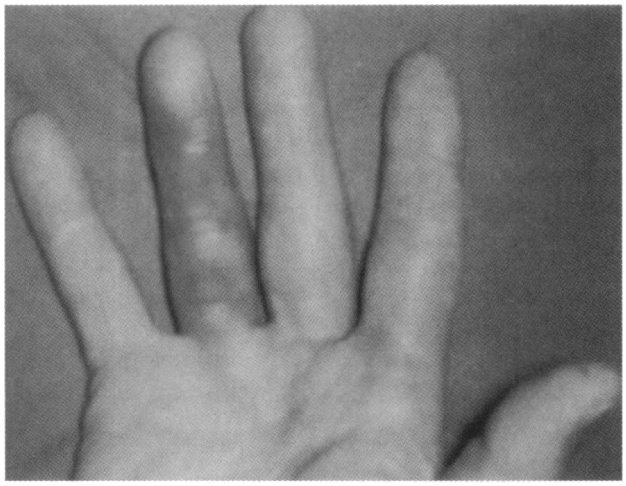

Figure 1 Acute blue finger showing discoloration on the volar aspect of the digit but not involving the tip.

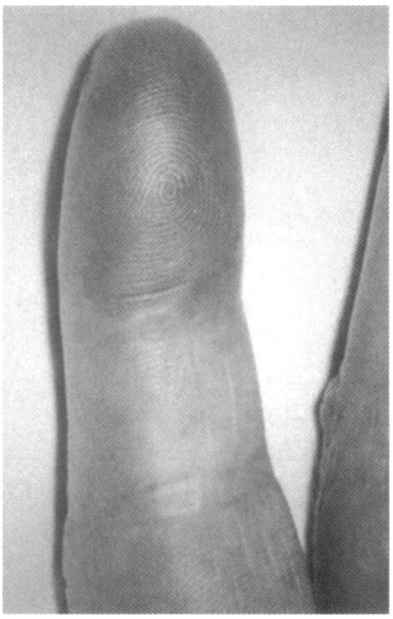

Figure 2 An acutely ischaemic finger –the result of emboli from a cardiac arrhythmia.

Table 4 The various disease states leading to digital ischaemia according to site of vessel involved

Aortic arch arteries	Atherosclerosis
	Takyasu's disease
	Giant cell arteritis
	Aneurysmal disease
Subclavian and axillary arteries	Thoracic outlet syndrome
	Trauma
	Atherosclerosis
Brachial, radial, ulnar and palmar arteries	Collagen vascular disease
	Atherosclerosis
	Buerger's disease
Digital arteries	Vasospasm
	Collagen vascular disease
	Microemboli
	Vibration-induced injury
	Trauma
	Cold injury
	Drug induced
	Haematological (*e.g.* polycythaemia)

Discussion

The episodes described in the 11 patients seem to follow a pattern. Each attack was usually preceded by a prodromal symptom of ache, pain or tingling for a few hours before the bluish discoloration of the finger. The finger felt stiff and numb. The discoloration extended mainly along the volar aspect of the digit sometimes into the palm, but never involved the tip of the finger (Fig. 1). The finger returned to normal within a few days in the majority of cases. Examination of all patients revealed no arrhythmias, cardiac murmurs or subclavian bruits and all had normal digital Doppler insonation and subclavian artery duplex scans. Two of the patients had been previously started on warfarin for similar episodes. Only one patient underwent angiography – which is not without its dangers and is not recommended for every patient with a blue finger.[1] In view of the benign self-limiting nature of the condition, it was felt unjustified to perform invasive tests, especially as the non-invasive tests were all normal.

Acute blue finger syndrome is uncommon.[2] Not only are there multiple causes, but many of the disease processes are poorly understood. Ischaemia may be constant or intermittent.[3] Disease may affect the upper limb vasculature from the aortic arch to the digital arteries (see Table 4).[4] In our series, the clinical history and non-invasive testing ruled out most of these conditions. There was no evidence of haematological or collagen vascular conditions on blood tests and capillaroscopy.

Painful bruising syndrome (autoerythrocyte sensitisation syndrome)[5] may present in a fashion similar to the described cases (*i.e.* with prodromal symptoms followed by bruising). The bruising is not limited to the digits, however, and commonly involves the legs and trunk.[6] There is a strong association with psychiatric complaints[5,6] in this syndrome. These features were not present in the cases described.

Six cases similar to the 11 described here were reported in 1982.[7] These were all women and many had had previous episodes and had a positive family history. Overall, therefore, there is a marked preponderance of

women in the 2 series (12F:2M). The aetiology of this syndrome is, however, not clear from the cases presented. There is no evidence of a systemic disorder or of a common medication. The majority of attacks occurred spontaneously in this series, but were precipitated by normal household activity in the series from 1982. As noted by Deliss and Wilson,[7] the discoloration appeared similar to subcutaneous bruising, but did not undergo the colour changes associated with resolving ecchymoses.

Although the condition is of no prognostic significance for the patient, it is likely to cause concern to the patient and their general practitioner. The discoloration is, however, clearly of a different distribution to an ischaemic finger where the tip of the digit is involved (Fig. 2).

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