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Case Report

Bruises of the face – two verry different tales

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Abstract

Bruises of the face, sometimes extending to the neck and upper torso, differ from bruising in systemic disease. Two case histories illustrate their main etiologies: bruising induced by coughing or straining which usually is an innocent occurrence, and bruising caused by rough handling the patient or elder abuse which need to be prevented.

Keywords: upper torso; systemic disease; bruises of the face

Introduction

Bruising is the result of bleeding into the skin when blood vessels are damaged and red blood cells escape into the surrounding skin. Bruises may be caused by disruption of the blood vessels (due to trauma, vasculitis, infection, collagen disorder, scurvy), disorders of hemostasis (thrombocytopenia, abnormal platelet function, abnormal clotting), defect of the skin tissues supporting the blood vessels (skin ageing, Ehlers-Danlos syndrome), and increased venous pressure [1]. A blunt trauma of sufficient power always causes bruises. Minor trauma may cause bruises when the blood vessels are fragile. Bruising is prevalent in the elderly and may be a consequence of skin ageing. Systemic or topical corticosteroids can cause bruising by inducing capillary fragility and skin atrophy. Bruising can be triggered or exacerbated by anticoagulant or antiaggregant medications. Bleeding may reflect an underlying bone marrow disorder. A careful medical history and physical examination can narrow the diagnostic possibilities [1-3].

The patient history should focus on the use of nonsteroidal anti-inflammatory drugs, platelet antiaggregant, and anticoagulant medications. Antidepressants also may cause bruises. Platelet dysfunction may be due to systemic disorders such as uremia. Presence of hepatosplenomegaly and lymphadenopathy indicates a need for workup for myeloproliferative disease, malignancy, or aplastic anemia. There may be acquired deficiencies of a coagulation factor, some with an immune underlying mechanism (e.g. acquired factor VIII deficiency, acquired factor V deficiency) or nonimmune. Vitamin K deficiency may result in insufficiency of coagulation factors; it may be the consequence of liver disease or treatment with antagonists of vitamin K. Severe acquired hypofibrinogenemia is caused by advanced liver disease. An acquired deficiency of factor X may occur in amyloidosis. Vitamin C deficiency (scurvy) should be considered when there is lethargy, perifollicular hemorrhages in the skin, gum bleeding and gum swelling; the cause may be a very poor diet or malabsorption. Consumption coagulopathy may occur in cancers. Acquired von Willebrand disease may be associated with a paraprotein or hypothyroidism. Spontaneous bruising may be due to abnormal blood vessels, abnormality of the adjacent skin, impaired platelet function, or a coagulation disorder, but often the trigger remains obscure [1].

Bruising limited to the head, or also extending to the neck and upper torso, differ from the usual distribution of bruises in systemic diseases. Their etiology also differs [4-6]. Two case histories illustrate the main causes of bruising limited to the head, their diagnosis, and avoiding misinterpretation.

Case histories

Case 1

A 84-year-old man was admitted for comprehensive nursing and palliative care, having suffered a traumatic brain hemorrhage 3 months earlier. He was in persistent vegetative state, breathed spontaneously through tracheostomy, and received feeding through gastrostomy. There were abundant secretions from the airways needing frequent suctioning. The patient's daily medications were phenytoin sodium 200 mg, levetiracetam 1500 mg, insulin glargine and transcutaneous fentanyl 12 mcg/72 hours. The BUN was 44 mg/dL, the eGFR 69 mL. The platelet count, prothrombin time and thyrotropin were within the normal range. After eleven months of uneventful nursing in our department, bruises appeared successively in areas adjacent to the right eyelids, the right temporo-parietal skin, and in the vicinity of the right mandibular angle (**Figure 1**). Overall, bruises occurred over 3 weeks and resolved over another 3 weeks. Other body areas were not affected by bruises. The patient's skin showed evidence of severe dermatoporosis confined to the extremities, but not involving the head and neck. Neurological examination did not disclose new focal signs.

Figure 1. Bruising confined to the head and neck in the context of straining and coughing

Bruises restricted to the head, sometimes extending to the neck and upper torso, differ from the usual distribution of bruises in systemic diseases and trauma. It has been described in the context of paroxysmal coughing, vomiting, Valsalva maneuver, epileptic seizure, myocardial infarction, proctoscopy, chest trauma, bungee jumping, yoga, and power lifting [4-14]. It was attributed to bursts of high intrathoracic pressure, as high as 300 mmHg, occurring during coughing [15]. Comparable high intrathoracic pressures but lasting much longer occur under vomiting, spontaneous straining, Valsalva maneuver and asphyxia [10]. Clinical and experimental studies have shown that the high intrathoracic pressure is transmitted to the vena cava, resulting in reversal of the venous flow, stasis in the venous tributaries and capillaries, and bleeding by break of small vessels [10]. Bruising confined to the head, neck and upper torso is usually an innocent occurrence [4-14)]. The proposito was heavily straining during suctioning the tracheal secretions, which could cause high intrathoracic pressures and produce bruises.The patient's relatives were concerned and questioning about the possibility of physical abuse of the patient. Supervision of the caregivers during washing and nursing the patient revealed no evidence of an unprofessional conduct. Neither did the appearance of the bruises match the patterns typically observed under patient abuse [16, 17]. The worries of the family could be relieved.

Case 2

A 71-year-old woman was admitted for treatment of stage 4, paratrochanteric pressure injury. She had been diagnosed with dementia CDR 3.0, i.e. severe memory loss and no significant function outside of the house, extrapyramidal syndrome, type 2 diabetes mellitus complicated by neuropathy, and osteoporosis. Her usual medications were insulin glargine, gabapentin, and laxatives. There was direct bone contact in the depth of the pressure ulcer. In suspecting osteomyelitis empirical antibiotic treatment was initiated. Because of insufficient eating enteral feeding was initiated through nasogastric tube. When she inadvertently pulled out the nasogastric tube, and then opposed to it being reinserted there was need to hold her head forcedly. Bruising on her jaw and face became apparent on the following days (**Figure 2**). At this time the platelet count was 412000/mm^3, PT INR 1, aPTT 25.7 secconds, eGFR 111 mL/min/1.73m^2, and C reactive protein 1 mg/dL.Rough handling the person with the hand or the fingertips may cause bruising at the site of impact. Bruises caused by physical mistreatment are often large (>5 cm) and are often found on the face, lateral right arm, or posterior torso [16, 17]. Rough handling this patient induced a sequence of inquiries, penalty, and measures to prevent recurrence of the accident.

Figure 2

Discussion

Bruises limited to the head, sometimes extending to the neck and upper torso, differ from the usual distribution of bruises in systemic diseases. Two case histories illustrate their main etiologies: bursts of high intrathoracic pressure during coughing or straining in Case 1, and rough physical treatment in Case 2.

Clinical and experimental studies showed that high intrathoracic pressure is transmitted to the vena cava, resulting in reversal of the venous flow, stasis in the dependent venous tributaries and capillaries, and bleeding by break of small vessels [10]. Intrathoracic pressures as high as 300 mmHg may occur during coughing, vomiting, spontaneous straining, Valsalva maneuver, or chest trauma [4-14, 18]. The reason why high intrathoracic pressure affects selectively capillaries in upper but not the lower body segments could not be found in the literature. We proposed the following explanation based on the equation Energy = Pressure x Volume. Equally exposed to bursts of high intrathoracic pressure are the superior and inferior vena cava. However, the thoracic segment of the inferior vena cava is merely a small segment while the superior vena cava is entirely intrathoracic. Therefore, the blood volume exposed to intrathoracic pressure in the superior vena cava is several times larger than the blood volume exposed to intrathoracic pressure in the inferior vena cava. So, the energy conveyed by high thoracic pressure to the tributaries of the superior vena cava is many-fold higher than the energy conveyed to the tributaries of the inferior vena cava [18]. In theory as well as in practice bruising caused by high intrathoracic pressure affects with predilection the upper body parts.The differential diagnosis of bruising caused by forceful handling in Case 2 was straightforward, in observing the pattern of the bruises and the circumstances of their appearance. They differed from the pattern of bruises caused by coughing or straining, differed from senile purpura which is usually superimposed on dermatoporosis [19], and also from bruising in systemic diseases which is predominantly localized in dependent body areas [1]. The differential diagnosis with an ecchymosis expanding from an internal organ to the skin is paramount, but should not be difficult based on associated acute pain and hypotension, clinical context, the different pattern and large extent of the bruise [20]. Avoidance of rough physical treatment by medical personnel is a must. If detected it is sanctioned. Rough physical treatment, mistreatment, and elder abuse, though differing by intent, may have

similar consequences. Vigilance is needed to avoid, detect, and condemn either [16, 17, 21, 22]. Elder abuse is common but infrequently identified. It may have serious medical and social consequences. Suspected or confirmed elder abuse or neglect needs intervention to handle medical, traumatic, and psychological issues, ensure patient safety, and reporting to the authorities. Not so, spontaneous bruising in the area of the head, and/or the upper torso.

In conclusion, bruising limited to the face, neck and/or thoracic outlet is an innocent occurrence, usually, devoid of clinical consequences. It might be attributed to bouts of high intrathoracic pressure during straining and coughing. This benign occurrence should be distinguished from ecchymosis expanding from an internal organ to the neck or chest wall, the latter needing urgent diagnostic imaging and treatment. It should also be distinguished from bruising caused by physical mistreatment, which needs inquiries, penalty, and measures to prevent the misconduct.

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