Internal jugular vein thrombosis, a rare complication of tuberculous cervical lymphadenopathy

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ABSTRACT

Extra-pulmonary tuberculosis can be presented as Lymphadenopathy; cervical region usually is the most frequent site. Tuberculous cervical lymphadenopathy is rarely associated with Internal Jugular Vein (IJV) thrombosis. Left IJV thrombosis with isolated cervical tuberculous lymphadenopathy is reported in a 27-year-old woman from Baghdad. Anticoagulation treatment succeed to restore the caliber of thrombosed IJV to normal. Thrombosis of adjacent IJV is a potential complication of delay in diagnosis and treatment of cervical lymph node tuberculosis.

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INTRODUCTION

The internal jugular vein (IJV) begins in the cranium at the conclusion of the sigmoid sinus. It exits the cranium via the jugular foramen and then courses through the anterior neck lateral to the carotid artery, covered by the sternocleidomastoid muscle for most of its length. It concludes by joining the subclavian vein, thus forming the brachiocephalic vein. The styloid process divides the lateral pharyngeal space into an anterior (muscular) compartment and a posterior compartment containing the carotid artery within the carotid sheath, the IJV, cranial nerves IX-XII, and lymph nodes.[1]

IJV thrombosis refers to an intraluminal thrombus occurring anywhere from the intracranial part to the junction with the subclavian vein to form the brachiocephalic vein, it is a rare condition. It is usually associated with central venous catheterization, trauma, head and neck infections or surgery, coagulation disorders, polycythemia, hyperhomocysteinemia, ovulation induction with gonadotropins, local infection or malignancy, neck massage, and intravenous drug abuse. It is also reported to occur spontaneously often secondary to an undiagnosed malignancy or hypercoagulable state.[2,3]

IJV thrombosis itself can have serious potentially life-threatening complications, including systemic sepsis, chylothorax, papilloedema, airway oedema, and pulmonary embolism (PE). Secondary infection of the thrombosis may result in septic thrombophlebitis. The diagnosis often is highly challenging and requires, a high degree of clinical suspicion. The morbidity and mortality of IJV thrombosis are comparable to those of upper-extremity deep vein thrombosis (DVT).[1]

Pulmonary embolism can occur but is uncommon when full-strength systemic anticoagulation is in place. The incidence of PE is 0.5% for isolated IJV thrombosis and 2.4% for combined IJV and subclavian/axillary vein thrombosis. Mortality has been reported to be 14% at 1

month, 33% at 3 months, and 42% at 12 months.[4]

Tuberculosis continues to be the biggest health problem in developing countries with enormous social and economic implications. Tuberculous lymphadenitis is the commonest form of extrapulmonary tuberculosis. Cervical lymph nodes are the most common lymph nodes affected by this disease—classically termed as "scrofula".[5]

Tuberculous cervical lymphadenopathy with IJV thrombosis is extremely rare complication of tuberculous cervical lymphadenopathy.[6]

CASE PRESENTATION

A 27 year-old, married women referred on March 2017 to the National Specialized Centre for Chest and Respiratory diseases in Baghdad complaining of neck swelling and redness of one-month duration. The swelling was progressive associated with mild constitutional symptoms. She has no cough no SOB. She has never smoked before and denied any history of contact with TB patient.

She has a history of multiple skin swellings in the chest wall, abdominal wall, thighs and legs noticed about 2 years ago. A condition which was not associated with any other local or systemic complaints. At that time, routine biochemical and basic haematologic tests were within normal apart from high erythrocyte sedimentation rate and low haemoglobin; 90 mm/hr and of 11 g/dl respectively. Fine needle aspiration (FNA) was done for some of these swellings and sent for histopathological study. The result has shown nonspecific chronic granulomatous lesions. A decision at that time was to treat her with simple antibiotic; however, no significant improvement was seen, on the contrary the lesions increase in number and extended to involve the skin of the face.

On her recent visit a tuberculous lymphadenitis was diagnosed and the patient has been started with anti-TB treatment (first line medication: 4 tablet daily of combined fixed dose formula of isoniazid, rifampicin, pyrazinamide and ethambutol) for 2 months. However, the supraclavicular lymph node has enlarged in size, and the overlying skin became red, tender, hot and feel as a cord like structure. Besides, the patient suffered from dizziness on raising her head upwards. A new ultra-sound (US) has shown a heterogeneous mass (predominantly hypoechoic with some hyperechoic areas) representing enlarged necrotic left supraclavicular lymph node of about (50 x 47 x 44 mm)(figure 1 A) with the adjacent part of the internal jugular vein lumen is slightly hyperechoic and showing no flow on color Doppler study (figure 1 B&C), the remaining part of the left IJV is normal. This echogenic part of the IJV which was measured about 18 mm in length suggested a thrombus formation as it was non-compressible, while the remaining part of the IJV was normal. Ultrasonography of the skin lesions in the anterior chest wall has

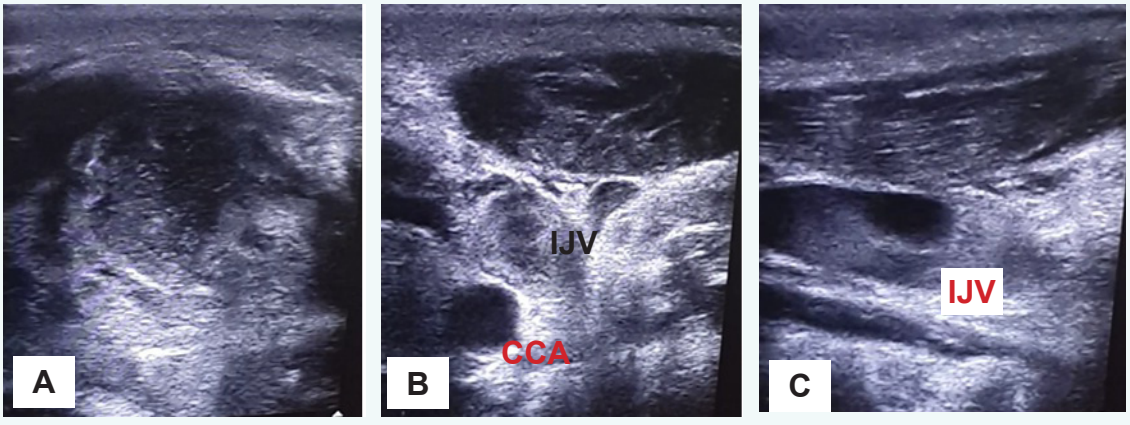

Figure 1: A: Ultrasound of the neck shows a heterogeneous mass (mainly hypoechoic with some hyperechoic areas) representing enlarged necrotic left supraclavicular LN about (50 x 47 x 44 mm). B & C: show the internal jugular vein its lumen is slightly hyperechoic, colour Doppler (has not shown in this panel) showed no flow within IJV.

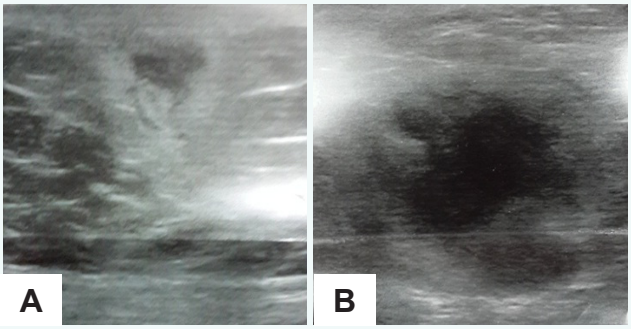

Figure 2: A: Ultrasonography of the anterior chest wall shows cystic lesion of 24 x 8 mm. B: shows another cystic lesion of 50 x 40 mm in the abdominal wall with thick irregular wall and thick and turbid contents.

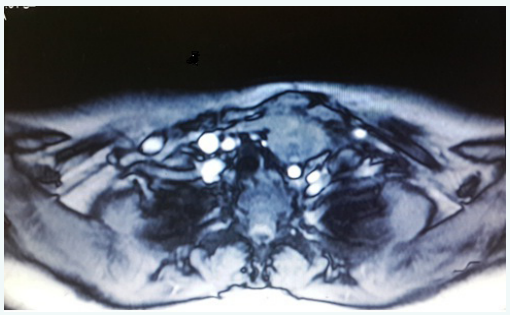

Figure 3: Magnetic Resonance Imaging (MRI) 2D Time of Flight (TOF) of the neck shows loss of flow related enhancement of left IJV with a filling defect in the left IJV leaving a 4 mm diameter as a remaining lumen, the filling defect was adjacent to the enlarged LN which appeared to a have a tunnel towards the overlying skin.

shown a cystic lesion of 24 x 8 mm. (Figure 2 A) While it has shown another cystic lesion in the anterior abdominal wall of about 50 x 40 mm in diameter with thick irregular wall and a turbid contents. (Figure 2 B)

Magnetic resonance venography (MRV) and contrast enhanced magnetic resonance imaging (MRI) scan of the neck (MRI 2D Time of Flight) has shown a loss of flow related enhancement of left IJV with a filling defect in the left IJV compromising the diameter of the lumen of the vein to 4 mm only. The filling defect was adjacent to the enlarged lymph node which appeared to have a tunnel towards the overlying skin. (Figure 3)

Meanwhile FNA was done from the swellings in the anterior chest and the anterior abdominal walls. GenXpert study of the aspirates showed a presence of mycobacterium tuberculosis which was resistance to rifampicin. This was prove also by culture and drug sensitivity. The patient was prescribed a second line anti-TB medications; amikacin injection 500 mg twice daily, levofloxacin tab 750 mg daily, cycloserine 250 mg trice daily, and ethionamide 250 mg trice. Anti-coagulant has been started at the same time.

After one month, the patient was re-examined. The pain and the cord like structure have disappeared from the neck. Re-scanning by ultrasound has found normal IJV which was compressible and the thrombus has disappeared completely. (Figure 4)

DISCUSSION

Venous thrombosis results from disturbance of pathophysiological mechanisms in Virchow's triad of endothelial damage, stasis, and hypercoagulable state.[2] Complication of IJV thrombosis is septic emboli, intracranial venous sinus thrombosis, raised intracranial pressure, pulmonary embolism, facial oedema, and loss of vision.[2] IJV thrombosis is uncommon and possibly life threatening complication. Early diagnosis is a must for appropriate management, to prevent potentially fatal complication due to IJV thrombosis.[2]

The associations between inflammation, hypercoagulable state, and haemostatic changes are established.[7,8] Thrombosis can also occur due to compression of the vein by lymph nodes

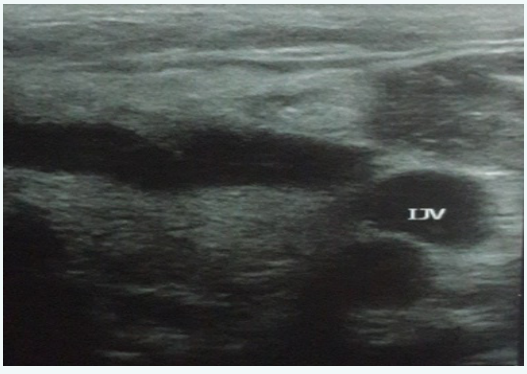

Figure 4: Ultrasound shows that IJV is normal and no thrombosis has seen.

in ganglionar form of tuberculosis as thrombosis can occur in the absence of any haemostatic abnormality.[9] Tuberculosis can cause thrombosis by various mechanisms like transitory hypercoagulable state, venous compression, and local invasion.[7,8,9]

Tuberculous lymphadenopathy can cause extensive vessel wall damage with endothelial damage predisposing to thrombosis.[6] IJV thrombosis in our case is likely to be due to venous compression, and transitory hypercoagulable state. Both US and MRV are accurate and reliable radiological investigations for detecting IJV thrombosis. They are useful in assessing surrounding soft tissue, and knowing the size and extent of cervical lymphadenopathy. US is inexpensive and readily available for monitoring response to treatment. US show number and extent of cervical lymph nodes, central caseation necrosis, matted lymph nodes, IJV invasion, and IJV thrombus. Doppler and MRV shows patency of remaining IJV lumen. Early detection of IJV thrombosis is must to avoid complications like raised intracranial pressure, cerebral venous sinus thrombosis, pulmonary embolism, and septic emboli.[6]

Anti TB medication should be immediately started in addition to anticoagulant therapy.[6]

Tuberculosis can involve any group of cervical lymph node and the enlarged lymph node can compress and invade IJV anywhere in the neck before it joins the ipsilateral subclavian vein.[10]

Conclusion

Internal Jugular Vein thrombosis, is a rare complication of tuberculous cervical lymphadenopathy. Early detection with US and/or MRV is essential for timely treatment and to avoid further complications.

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Abbreviation list: Decilitre (**dl**), Deep vein thrombosis (**DVT**), Fine needle aspiration (**FNA**), Gram (**g**), Hour (**hr**), Internal jugular vein (**IJV**), Magnetic resonance imaging (**MRI**), Magnetic resonance venography (**MRV**), Millimetre (**mm**), Pulmonary embolism (**PE**), Ultra-sound (**US**)

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